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April 2001

# National Potato Germplasm Evaluation and Enhancement Report, 1999

Seventieth Annual Report  
by Cooperators

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# **National Potato Germplasm Evaluation and Enhancement Report, 1999**

**Seventieth Annual Report  
by Cooperators**

Compiled and edited by Kathleen G. Haynes

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Beltsville Agricultural Research Center  
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Beltsville, MD 20705

Haynes, Kathleen G. (ed.). 2001. National Potato Germplasm Evaluation and Enhancement Report, 1999: Seventieth Annual Report by Cooperators. U.S. Department of Agriculture, Agricultural Research Service, ARS-158.

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United States Department of Agriculture,  
Beltsville, MD and Presque Isle, ME

K.G. Haynes, K.O. DeLong, D. Fleck, K.  
Frazier, M. Bragg, B. Adams, and C.  
Lagasse

**Objectives:** The USDA potato breeding program at Beltsville has four main objectives: (1) to develop improved, pest-resistant germplasm and varieties; (2) to develop improved germplasm and varieties for processing; (3) to enhance germplasm for specific characteristics relating to pest resistance, yield, environmental stress, human nutrition and consumer acceptance; and, (4) to conduct statistical genetic studies in potato breeding.

**Breeding:** Hybridizations in the greenhouse at BARC in early 1999 were made among round, white-skinned, tetraploid *S. tuberosum* selections and varieties with either processing or fresh market potential and resistance to late blight, early blight, Fusarium dry rot, or corky ringspot. True seeds were obtained from 438 combinations. Hybridizations were also made among red-skinned and/or yellow-fleshed tetraploid selections and varieties, among which were a number of 4x-2x hybrids of *S. tuberosum* x *S. phureja*-*S. stenotomum*, and true seeds were obtained from 263 combinations. Bulk pollinations were made among the 288 clones comprising the diploid high specific gravity *S. phureja*-*S. stenotomum* population.

#### **Germplasm Enhancement Efforts:**

Twenty-six high specific gravity *S. tuberosum* x *S. phureja*-*S. stenotomum* hybrids were evaluated for internal heat necrosis and specific gravity in NC, VA and NJ. Another 88 were increased for similar

testing in 2000. A number of intense yellow-fleshed diploid *S. phureja*-*S. stenotomum* clones were selected for identifying and quantifying carotenoid content. The work on mapping late blight resistance in a diploid *S. phureja*-*S. stenotomum* population continued. Various potato species hybrids from Bob Hanneman's program were evaluated for resistance to common scab and cold chipping ability.

**Yield and Processing Evaluations:** Yield trials for round whites (BARC Tables 1-5), specialty market types (BARC Tables 6-7), russets (BARC Table 8), and 4x-2x hybrids (BARC Table 9) were conducted at Echo Lake. These were planted in a randomized complete block design with four replications of 25 hills on May 11, 1999. Plants were spaced 9 inches within the row for all trials except the russet trial, in which plants were spaced 12 inches within the row. After harvest, tubers from each plot were graded, specific gravity was determined by the weight in air and weight in water method, and the ten largest tubers from each plot were cut to determine the presence of hollow heart. Tuber samples were stored at 50°F, 45°F, and 40°F. Tubers were processed out of 50°F, 45°F, 40°F, and following a three week reconditioning period of 70°F from 40°F storage during January and February for the round white, specialty market and russet trials. Tubers from the 4x-2x hybrid trial were stored at 50°F and chipped on December 13, 1999. For each combination of temperature and processing date, five tubers from each plot were processed (20 samples per clone).

Tuber samples from all yield trials except the russets were processed into potato chips by taking 1/16-inch slices from the cross section of each tuber. Slices were rinsed in



water and placed on paper towels to remove excess moisture. Chips were then fried at 340°F in Primex vegetable shortening until bubbling ceased.

Among the most advanced round, white-skinned selections in the program (BARC Table 1), B0178-34, B0564-8, B0564-9, B0766-3 and B1240-1 show promise for the processing industry. All have been entered into the Foundation Seed Program at Uihlein Farm. Seed of B0178-34 and B0564-8 will be available from certified seed growers in Maine for the 2000 growing season. B0178-34 is a long term cold storage chipper with high specific gravity which can be reconditioned from 40°F into February (currently as long as we test). Two major drawbacks of B0178-34 are susceptibility to common scab and Fusarium dry rot. For this reason, we can recommend B0178-34 only for areas that chip directly from the field and for areas without common scab problems. B0564-8 is currently the selection with the most potential. It has a very attractive appearance, chips well from the field and from early-season storage, has moderately high specific gravity, and has very little internal heat necrosis in the mid-Atlantic states. B0564-9 is a full-sib of B0564-8. Although it shares many of the same qualities as B0564-8, the one grower who had it reported some problems with storage rot. B0766-3 is an excellent chipper out of 45°F storage and following reconditioning. It has some tolerance to common scab. Yields were a little lower than normal as compared to the standard in Maine this year for some unknown reason. There continues to be interest in this selection, especially in the chipping area of central Aroostook County. B1240-1 is another potential chipping selection, although it chips erratically. This year it chipped into February out of both 50°F and

45°F. Last year it only chipped out of 50°F in January. It has some tolerance to a number of diseases, which may interest organic gardeners.

Several of the newer selections show some potential as chippers, but have lower yields than desirable: B1598-4, B1709-6, B1828-4, B1829-5, B1834-1, B1873-6 and B1884-9. However, B1712-18 and B1826-1 have good potential as high yielding, chipping selections. Both of these were equal to Atlantic in yield, but had specific gravity much less (>0.010) than Atlantic.

For fresh market consideration, B1801-3, B1801-6 and B1806-8 were especially attractive and had good yields. All have yellow-flesh, too. (They were inadvertently put in the round white trial.)

Among the specialty market selections in the program, B0811-4, B1102-3, B1492-12, and B1521-2 show promise for the red-skinned, creamer market with more than 70% of the tubers less than 2.25 inches in diameter. B1523-4, a red-skinned selection, is in the Foundation Seed Program at Uehlein Farm and has a nice size distribution with not very many < 1 7/8 or > 3 1/4 inches in diameter. The yellow-fleshed selection B1752-5 has been attractive with fairly good yields, but hollow heart is a problem. B1763-4 and B1816-5 are two purple-skinned selections that also happen to chip well. B1816-5 is also yellow-fleshed.

The best processing russet-skinned selection was B1409-2. It had good yields, high specific gravity, and light fry color out of 45°F from February storage. B1463-1 had some problems with growth cracks this year. B1649-8 was a russet-skinned selection that did not process and was mostly round to oblong.

We included a number of 4x-2x hybrids resulting from crosses between tetraploid varieties or our advanced selections and diploid *S. phureja*-*S. stenotomum* clones from the first cycle of the high specific gravity population in a yield trial. None of them chipped very well, although some chipped  $\leq 7.0$ , but chipping out of 50°F in December with such poor chipping scores limits their chipping potential. Specific gravity ranged from 1.071 to 1.093. Yields ranged widely, too, from 108 to 395 cwt/acre. A high number of small tubers were produced by many of the 4x-2x hybrids. However, there were some interesting characteristics in some clones. BTD0017-6 produced two layers of red-skin, which may be a valuable trait in keeping red-skinned potatoes looking red-skinned after skinning during harvest. However, it also produced red-streaks in the tuber flesh. Even though small, BTD0038-1 was particularly attractive and included as a parent in the hybridization program. BTD0001-16 was included in the hybridization program and the first of its progeny have advanced to the 150-hill stage (B1497-22 and B1497-33). BTD0010-5, BTD0017-6, and BTD0022-16, had some resistance to common scab, similar to Pike and Superior. A fair number of these hybrids were also resistant to internal heat necrosis under high temperature growing conditions (data not shown).

**BARC Table 1.** Yield, tuber size distribution, and quality characteristics of round whites harvested 132 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution									
	% Stand <sup>1</sup>	Mkt cwt/A	% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"	SG <sup>2</sup>	HH <sup>3</sup>
Atlantic	99	351	96	2.8	18.9	60.0	17.4	1.0	91	1
B0178-34	100	287	96	3.6	24.9	60.2	10.7	0.7	95	2
B0564-8	100	323	94	6.0	25.6	61.7	6.6	0.0	85	0
B0564-9	97	303	95	3.0	18.1	58.8	18.0	2.1	84	3
B0766-3	100	240	93	6.2	29.4	49.9	13.7	0.8	80	1
B1240-1	98	260	94	3.9	22.3	51.4	20.7	1.8	82	5
Monona	99	263	91	7.5	37.2	50.3	4.0	1.1	66	1
LSD (0.05)		112							03	

<sup>1</sup>Percent stand on June 18, 1999.

<sup>2</sup>1.0 omitted.

<sup>3</sup>Number of tubers with hollow heart out of 40.



BARC Table 1. Continued.

Temperature	50°F	45°F	40°F	40°-70°F	50°F	45°F	40°F	40°-70°F	40°F	40°-70°F	TGA <sup>6</sup>
Date	1/10	1/10	1/12	1/6	2/4	2/3	2/7	2/1			
Pedigree	Chip <sup>4</sup> Spt <sup>5</sup>	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	Chip Spt	
Atlantic	5.3	M	6.6	S	9.4	O	7.5	S	5.9	VL	5.81
B0178-34	5.5	M	6.2	M	8.0	O	6.9	S	5.6	VL	6.96
B0564-8	5.7	M	7.3	M	9.5	O	9.0	S	6.1	VL	5.86
B0564-9	6.5	S	7.2	S	9.8	O	8.9	S	7.3	L	6.00
B0766-3	5.1	S	5.3	S	9.0	O	6.8	S	5.2	VL	7.84
B1240-1	4.8	S	6.0	S	9.0	O	8.9	S	5.3	S	5.49
Monona	4.8	S	5.5	S	9.4	O	7.9	S	4.8	M	---

<sup>4</sup>Chips 1-7 = satisfactory, >7 unsatisfactory

<sup>5</sup>Sprout O = no sprouts

S = < 0.5"

M = 0.5" - 1.5"

L = 1.5" - 2.5"

VL = > 2.5"

<sup>6</sup>Total glycoalkaloid content in mg/100g fresh weight

**BARC Table 2.** Yield, tuber size distribution, and quality characteristics of round whites harvested 132 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution									
	% Stand <sup>1</sup>	Mkt cwt/A	% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"	SG <sup>2</sup>	HH <sup>3</sup>
Atlantic	100	421	95	3.1	21.1	59.7	13.9	2.2	91	6
B1316-5	95	347	93	6.0	34.3	51.4	7.7	0.6	88	4
B1322-19	100	337	93	6.6	40.1	50.9	2.4	0.0	83	0
B1327-6	99	340	96	2.6	17.9	55.2	23.1	1.3	79	1
B1339-2	100	351	89	10.7	46.1	41.8	1.4	0.0	92	6
B1497-22	98	344	97	2.8	15.2	68.1	13.3	0.6	76	2
B1497-33	100	359	89	8.2	37.1	46.3	5.9	2.4	82	3
B1591-1	100	307	91	8.6	36.9	51.7	2.8	0.0	91	0
B1598-4	100	322	97	3.0	20.7	52.8	23.5	0.0	73	0
B1624-22	95	372	95	3.1	21.9	63.0	10.5	1.5	81	3
B1709-6	99	315	95	2.7	19.8	58.8	15.9	2.8	80	5
Norchip	100	311	88	11.7	46.6	39.3	2.4	0.0	78	0
LSD (0.05)		67							04	

<sup>1-5</sup>See BARC Table 1

BARC Table 2. Continued.

Temperature Date	50°F 1/10		45°F 1/11		40°F 1/12		40°-70°F 1/6		50°F 2/7		45°F 2/3		40°F 2/8		40°-70°F 2/1	
Pedigree	Chip <sup>4</sup>	Spt <sup>5</sup>	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt	Chip	Spt
Atlantic	5.8	M	6.2	S	9.0	O	7.8	S	6.3	VL	5.6	VL	9.3	S	7.0	M
B1316-5	7.5	VL	8.1	L	10.0	O	9.8	M	8.0	VL	8.3	VL	10.0	S	8.7	M
B1322-19	7.5	L	7.1	M	9.1	O	8.0	S	7.0	VL	7.5	VL	9.6	O	8.3	S
B1327-6	5.6	S	6.1	S	9.6	O	9.0	S	5.8	S	6.0	S	9.5	O	8.0	S
B1339-2	6.4	M	5.8	S	8.8	O	8.4	M	6.6	VL	7.6	VL	9.3	O	7.6	L
B1497-22	6.9	VL	6.5	L	9.6	S	8.9	M	7.2	VL	7.4	VL	9.8	S	8.7	M
B1497-33	7.2	VL	7.9	VL	9.5	S	9.1	L	7.9	VL	8.1	VL	10.0	S	8.9	VL
B1591-1	6.7	VL	6.4	L	9.2	O	8.1	S	6.1	VL	6.8	VL	9.6	S	8.3	M
B1598-4	4.5	S	5.7	S	8.3	O	7.9	S	5.3	M	6.3	M	9.2	S	7.3	S
B1624-22	6.3	M	6.3	M	8.2	O	7.3	S	5.8	L	6.3	L	8.7	S	7.4	S
B1709-6	5.3	S	5.6	S	8.0	O	8.4	S	5.3	M	6.4	S	8.9	O	7.7	S
Norchip	6.1	S	6.7	S	9.0	O	8.2	S	6.0	M	6.9	L	10.0	S	8.0	S

**BARC Table 3.** Yield, tuber size distribution, and quality characteristics of round whites harvested 132 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution										Mkt cwt/A	% Stand <sup>1</sup>	% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"	SG <sup>2</sup>	HH <sup>3</sup>
Atlantic	99	305	96	3.5	22.9	60.8	12.8	0.0	92	1										
B1712-18	100	335	96	2.8	14.8	59.6	22.2	0.7	78	0										
B1722-5	100	333	90	2.9	11.4	47.0	31.2	7.5	71	5										
B1801-3	99	364	92	4.7	18.4	56.0	18.0	2.9	85	4										
B1801-6	100	354	93	4.3	18.4	56.1	18.6	2.6	83	5										
B1806-8	99	305	96	4.3	30.6	60.8	4.3	0.0	79	0										
B1825-5	99	178	93	2.0	14.7	50.3	27.6	5.4	80	1										
B1826-1	99	365	91	3.4	19.8	48.8	22.5	5.4	79	0										
B1828-4	100	237	92	4.3	23.0	52.2	16.6	3.8	82	1										
B1829-5	100	289	91	9.2	37.2	49.1	4.5	0.0	82	0										
B1834-1	100	271	82	18.1	46.5	35.4	0.0	0.0	89	1										
Coastal Chip	100	339	95	4.5	28.7	57.9	8.8	0.0	85	0										
LSD (0.05)		86							03											

**BARC Table 3.** Continued.

Temperature Date	50°F 1/10	45°F 1/12	40°F 1/14	40°-70°F 1/6	50°F 2/3	45°F 2/7	40°F 2/7	40°-70°F 2/1
Pedigree	Chip <sup>4</sup>	Spt <sup>5</sup>	Chip	Spt	Chip	Spt	Chip	Spt
Atlantic								
B1712-18	5.0	M	7.8	O	6.7	S	8.8	O
B1722-5	5.3	VL	8.5	O	8.0	S	9.2	S
B1801-3	7.1	VL	10.0	O	9.3	S	10.0	O
B1801-6	7.8	VL	9.8	O	8.9	S	10.0	S
B1806-8	7.0	VL	9.4	O	8.4	S	10.0	S
B1825-5	6.0	M	7.8	O	7.3	S	9.0	S
B1826-1	6.6	O	8.0	O	7.9	S	8.7	O
B1828-4	4.8	L	8.1	O	5.7	S	8.8	O
B1829-5	5.0	S	8.1	O	6.5	S	8.8	S
B1834-1	4.8	S	8.1	O	7.8	S	8.8	S
Coastal Chip	5.3	M	8.1	O	7.4	S	8.8	S
	5.0	VL	8.2	O	6.9	S	8.8	S

**BARC Table 4.** Yield, tuber size distribution, and quality characteristics of round whites harvested 132 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution									
	% Stand <sup>1</sup>	Mkt cwt/A	% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"	SG <sup>2</sup>	HH <sup>3</sup>
Atlantic	100	442	97	2.9	17.2	64.0	15.8	0.0	90	0
B1856-10	100	294	92	8.2	30.3	58.3	3.2	0.0	86	5
B1870-17	99	426	93	4.7	21.3	57.6	14.4	2.0	72	0
B1870-3	100	407	95	4.8	24.6	62.9	7.7	0.0	66	0
B1871-1	100	370	94	6.4	28.2	57.9	7.5	0.0	71	0
B1872-1	100	239	86	14.2	55.7	30.1	0.0	0.0	87	0
B1872-8	100	353	93	6.9	42.9	49.0	1.3	0.0	78	0
B1873-4	100	283	91	9.4	43.3	45.3	2.0	0.0	82	0
B1873-6	99	350	87	12.6	43.8	42.3	1.4	0.0	92	1
B1876-10	100	313	95	5.4	27.7	64.3	2.6	0.0	69	0
Superior	100	384	94	5.2	27.7	56.1	10.3	0.7	81	0
LSD (0.05)		49							03	

<sup>1-3</sup>See BARC Table 1.



**BARC Table 5.** Yield, tuber size distribution, and quality characteristics of round whites harvested 132 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution							
	% Stand <sup>1</sup>	Mkt cwt/A	% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"
Atlantic	100	409	94	4.5	27.1	57.8	9.2	1.4
B1878-7	100	283	92	2.1	14.2	58.6	19.4	5.7
B1880-4	100	342	93	7.3	37.7	52.9	2.2	0.0
B1880-6	100	304	85	14.8	49.3	35.1	0.8	0.0
B1884-9	100	338	94	5.0	25.8	59.6	8.1	1.4
Snowden	100	383	92	8.3	40.4	46.6	4.7	0.0
LSD (0.05)		116						06

<sup>1-5</sup>See BARC Table 1.



BARC Table 5. Continued.

Temperature Date Pedigree	50°F 1/10 Chip <sup>4</sup>	Spt <sup>5</sup>	45°F 1/12 Chip	Spt	40°F 1/12 Chip	Spt	40°-70°F 1/6 Chip	Spt	50°F 2/4 Chip	Spt	45°F 2/3 Chip	Spt	40°F 2/8 Chip	Spt	40°-70°F 2/2 Chip	Spt
Atlantic B1878-7	5.8	M	6.1	S	9.1	O	7.5	S	5.8	VL	6.3	VL	9.5	S	7.4	M
B1880-4	6.4	O	6.4	S	8.5	O	8.6	S	6.9	S	6.8	S	8.8	O	9.4	S
B1880-6	6.4	S	6.1	S	8.8	O	8.0	S	6.0	M	6.3	M	9.4	O	8.6	S
B1884-9	6.7	L	6.5	L	9.5	O	8.7	S	6.8	VL	6.8	VL	9.5	O	9.5	M
Snowden	5.3	S	5.1	S	8.2	O	6.8	S	5.3	M	5.6	M	8.0	S	6.8	S
	5.5	M	5.3	M	7.8	O	5.5	S	5.0	VL	5.8	VL	7.6	S	6.8	M

**BARC Table 6.** Yield, tuber size distribution, and quality characteristics of specialty market potatoes harvested 133 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution										
	% Stand <sup>1</sup>	Mkt cwt/A	% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"	SG <sup>2</sup>	HH <sup>3</sup>	Comments
B0811-4	100	255	85	15.4	57.4	27.3	0.0	0.0	88	0	red skin
B0984-1	100	290	92	5.8	25.8	54.0	12.5	1.9	84	0	red skin
B1102-3	100	206	73	26.6	49.7	22.3	1.4	0.0	72	0	red skin
B1145-2	95	321	90	5.6	26.5	52.2	11.1	4.7	71	5	red skin
B1425-9	100	415	92	6.5	24.7	57.1	10.6	1.1	95	5	yf
B1491-5	95	315	91	7.9	27.7	56.9	6.6	1.0	70	0	red skin, yf
B1492-12	100	247	74	26.3	47.7	26.0	0.0	0.0	76	0	red skin
B1495-6	100	261	88	10.8	31.9	44.4	12.1	0.8	73	0	red skin
B1521-2	99	258	75	25.2	51.4	21.7	1.7	0.0	81	2	red skin
B1523-4	98	282	91	9.1	40.5	45.8	4.6	0.0	80	0	red skin
Red Pontiac	100	426	90	5.0	16.8	41.2	32.3	4.7	68	3	red skin
Yukon Gold	100	323	93	3.9	15.8	55.1	21.6	3.5	88	1	yf
LSD (0.05)		54							03		

<sup>1-6</sup>See BARC Table 1

BARC Table 6. Continued.

Temperature	50°F	45°F	40°F	40°-70°F	50°F	45°F	40°F	40°-70°F	TGA <sup>6</sup>
Date	1/5	1/12	1/12	1/6	2/4	2/7	2/8	2/2	
Pedigree	Fry <sup>4</sup> Spt <sup>5</sup>	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt
B0811-4	6.8 S	7.1 M	8.7 O	7.9 S	6.2 L	6.8 VL	9.3 O	8.1 M	2.82
B0984-1	6.8 O	7.0 O	9.3 O	8.9 S	6.7 S	6.6 S	9.3 O	9.2 S	4.92
B1102-3	7.4 S	8.6 S	9.5 O	9.2 S	7.5 M	8.0 M	10.0 O	9.5 S	8.20
B1145-2	7.0 S	7.6 S	9.8 O	9.5 S	7.9 M	7.3 M	10.0 O	10.0 S	4.35
B1425-9	6.8 L	7.4 VL	9.5 S	8.2 S	7.3 VL	7.6 VL	9.8 S	8.8 L	3.89
B1491-5	8.4 S	8.2 S	9.5 O	9.7 S	7.9 S	8.2 M	10.0 O	9.7 S	1.95
B1492-12	7.5 S	7.5 S	9.2 O	9.1 S	7.3 M	8.3 M	10.0 S	10.0 S	2.73
B1495-6	6.8 S	7.4 S	9.2 O	8.5 S	7.2 M	8.2 M	9.8 O	9.0 S	4.00
B1521-2	7.5 M	8.1 O	9.4 O	9.0 S	8.2 S	8.4 S	9.6 O	9.5 S	2.65
B1523-4	8.2 VL	8.8 M	9.9 O	9.0 M	9.9 VL	9.7 VL	10.0 S	9.9 L	6.01
Red Pontiac	8.5 S	9.9 S	10.0 O	10.0 S	9.5 L	9.6 VL	10.0 O	9.9 S	-----
Yukon Gold	8.0 S	8.7 S	10.0 O	9.2 S	7.5 S	8.4 S	10.0 S	9.3 S	5.51

**BARC Table 7.** Yield, tuber size distribution, and quality characteristics of specialty market potatoes harvested 133 days after planting at Echo Lake in 1999.

Pedigree	% Stand <sup>1</sup>	Mkt cwt/A	Tuber Size Distribution							HH <sup>3</sup>	Comments
			% Mkt	<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	>4"	SG <sup>2</sup>		
B1529-1	100	385	89	11.0	40.6	45.7	2.7	0.0	78	0	purple skin
B1752-5	100	338	92	7.8	26.6	58.9	6.7	0.0	70	14	yf
B1758-3	97	439	91	6.3	20.8	53.5	16.9	2.5	76	3	red skin
B1758-4	99	335	91	7.5	21.2	54.2	16.0	1.2	70	3	red skin
B1763-4	100	273	91	7.1	26.1	57.3	7.3	2.3	75	0	purple skin
B1768-10	100	286	84	15.0	43.2	38.7	2.4	0.6	79	3	red skin
B1804-6	100	380	85	15.3	46.3	37.9	0.5	0.0	77	1	yf
B1816-5	100	381	89	11.2	44.4	43.4	1.0	0.0	82	0	purple skin, yf
Red LaSoda	100	386	91	9.1	28.2	53.4	9.3	0.0	67	13	red skin
Redsen	100	297	89	10.0	26.9	52.8	9.6	0.8	70	0	red skin
Yukon Gold	100	377	96	4.4	20.6	55.1	19.9	0.0	85	7	yf
LSD (0.05)		67							04		

<sup>1-5</sup> See BARC Table 1

BARC Table 7. Continued.

Temperature Date	50°F 1/5	45°F 1/12	40°F 1/14	40°-70°F 1/6	50°F 2/4	45°F 2/7	40°F 2/8	40°-70°F 2/2
Pedigree	Fry <sup>4</sup> Spt <sup>5</sup>	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt	Fry Spt
B1529-1	7.7 M	8.7 M	10.0 O	9.8 S	7.5 M	8.3 VL	10.0 S	9.0 S
B1752-5	8.5 VL	8.8 L	10.0 O	9.7 S	7.9 VL	8.8 L	10.0 S	9.7 S
B1758-3	8.2 S	8.5 S	10.0 O	9.5 S	8.5 M	8.7 M	10.0 S	9.7 S
B1758-4	7.7 S	8.9 S	10.0 O	9.7 S	8.6 M	9.0 M	10.0 O	9.9 S
B1763-4	6.0 S	7.1 S	10.0 O	9.6 S	5.5 M	7.1 M	9.8 O	8.7 S
B1768-10	6.9 S	7.8 O	10.0 O	9.8 S	7.3 S	8.0 S	10.0 O	9.3 S
B1804-6	6.8 M	8.2 M	9.8 S	8.4 S	6.9 L	7.6 VL	9.6 S	7.5 S
B1816-5	6.3 S	5.8 S	8.8 O	8.2 S	6.3 L	6.3 M	8.8 O	8.0 S
Red LaSoda	8.0 S	9.5 S	10.0 O	9.7 S	8.3 S	9.7 S	10.0 O	9.6 S
Redsen	6.7 S	7.3 S	9.5 O	9.4 S	6.6 L	7.7 L	9.5 O	8.8 M
Yukon Gold	8.3 O	9.0 O	10.0 O	9.5 S	8.4 S	9.0 S	10.0 O	9.3 S

**BARC Table 8.** Yield, tuber size distribution, and quality characteristics of russets harvested 133 days after planting at Echo Lake in 1999.

Pedigree	Tuber Size Distribution									
	% Stand <sup>1</sup>	Mkt cwt/A	% Mkt	<2 oz	2-6 oz	6-10 oz	10-16 oz	>16 oz	SG <sup>2</sup>	HH <sup>3</sup>
B1409-2	100	354	95	4.2	22.5	60.8	11.4	1.1	90	3
B1463-1	100	344	96	3.3	27.6	63.5	4.9	0.6	83	1
B1649-8	100	352	91	3.9	21.8	54.1	14.9	5.4	82	1
Amey	100	319	93	1.8	14.8	61.3	17.0	5.0	89	18
Russet Burbank	100	348	89	9.6	44.0	41.4	3.4	1.6	86	0
Russet Norkotah	99	319	91	8.3	32.0	52.8	5.9	1.0	72	1
Shepody	99	277	92	6.1	26.2	54.0	11.5	2.3	79	13
LSD (0.05)		57							04	

<sup>1-3, 5, 6</sup>See BARC Table 1

BARC Table 8. Continued.

Temperature Date Pedigree	50°F 1/7 Fry <sup>4</sup>	Spt <sup>5</sup>	45°F 1/7 Fry	Spt	40°F 1/7 Fry	Spt	40°-70°F 1/7 Fry	Spt	50°F 2/2 Fry	Spt	45°F 2/2 Fry	Spt	40°F 2/2 Fry	Spt	40°-70°F 2/2 Fry	Spt	TGA <sup>6</sup>
B1409-2	1.2	S	1.7	S	4.4	O	3.3	S	1.4	M	1.5	M	4.3	O	2.9	S	5.34
B1463-1	2.9	M	3.0	M	4.4	O	3.0	S	2.6	L	3.1	VL	4.4	S	3.7	M	3.88
B1649-8	3.6	M	3.5	L	4.5	S	4.6	S	3.4	VL	4.0	VL	4.6	S	4.9	M	4.36
Amey	1.7	S	1.9	S	4.7	O	2.9	S	2.0	M	2.4	M	4.8	O	2.8	S	5.21
Russet Burbank	3.0	S	2.8	O	5.0	O	3.7	S	2.9	S	3.3	S	4.9	O	4.1	S	7.89
Russet Norkotah	2.4	O	2.9	O	5.0	O	3.2	O	2.8	M	3.2	S	5.0	O	4.0	S	----
Shepody	2.5	S	3.0	S	5.0	O	3.6	S	2.7	M	3.3	M	5.0	O	3.8	S	----

<sup>4</sup> Fry 1-3 = satisfactory

**BARC Table 9.** Yield, tuber size distribution, and quality characteristics of 4x-2x hybrid potatoes harvested 126 days after planting at Aroostook Farm in 1999.

Pedigree	% Stand <sup>1</sup>	Mkt cwt/A	Tuber Size Distribution					>4"	SG <sup>2</sup>	HH <sup>3</sup>	Chip <sup>4</sup>	Spt <sup>5</sup>	Comments
			<1 7/8"	1 7/8 - 2 1/4"	2 1/4 - 3 1/4"	3 1/4 - 4"	4 1/4 - 5"						
B1564-1	100	300	11.4	29.1	53.1	6.4	0.0	81	2	6.9	M		brown skin
B1564-2	100	333	16.5	40.3	41.3	2.0	0.0	84	1	7.9	M		tan skin
B1564-4	80	212	16.3	44.1	36.4	3.1	0.0	87	2	6.9	M		tan skin
B1564-8	99	211	19.1	42.3	36.4	2.2	0.0	91	1	7.9	M		tan skin
BTD0001-16	100	162	24.5	48.2	24.6	2.7	0.0	77	1	8.0	M		brown skin
BTD0001-21	97	173	30.0	53.2	14.9	1.9	0.0	79	0	7.6	S		tan skin
BTD0008-1	96	330	9.2	30.9	53.9	5.3	0.7	77	0	7.2	S		tan skin
BTD0008-10	93	276	16.2	40.7	39.3	3.8	0.0	85	6	6.9	S		tan skin
BTD0008-5	99	361	8.0	28.0	52.3	11.2	0.5	81	5	7.8	S		tan skin
BTD0010-5	100	221	31.4	47.8	20.3	0.5	0.0	90	4	8.0	S		tan skin
BTD0017-6	92	108	34.5	54.4	9.8	1.3	0.0	71	1	7.5	S		red skin
BTD0022-16	93	188	33.8	54.4	11.8	0.0	0.0	93	5	7.7	M		bicolor
BTD0024-8	100	219	11.2	39.1	44.5	5.2	0.0	77	0	7.1	S		tan skin
BTD0028-3	100	243	16.1	53.4	30.1	0.3	0.0	82	2	7.0	M		brown skin
BTD0031-2	94	395	5.4	26.3	53.6	12.4	2.3	83	0	7.4	S		tan skin
BTD0038-1	98	138	20.8	56.6	22.7	0.0	0.0	86	2	8.0	VL		tan skin
BTD0038-2	91	276	5.0	28.3	59.4	6.3	0.9	86	15	8.6	M		tan skin
Red LaSoda	100	288	11.1	36.2	46.4	6.3	0.0	69	18	9.4	O		red skin
LSD (0.05)		64								08			

<sup>1</sup> Percent stand on June 28, 1999

<sup>4</sup> Chipped out of 50°F December 13, 1999.

<sup>2-5</sup> See BARC Table 1.



U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE

Potato Genetics and Enhancement Project-  
Madison, Wisconsin

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Evaluation of Parental Materials and  
Enhancement Selections for Resistance to  
Late Blight, Colorado Potato Beetle, Early  
Dying and Scab in Field Tests at the UW  
Agricultural Research Station, Hancock,  
Wisconsin.

We continue to evaluate our materials for resistance to late blight and Colorado potato beetle in unsprayed plots and for early dying and scab in an infected field plot at Hancock. The following is a summary of our field data taken on materials tested in 1999 as a part of our on-going effort to assess the materials in our program for these traits.

Late blight. In this study, 1001 entries were tested for their reaction to natural late blight infection in the field in an unreplicated trial (Table 1). Among those tested were 500 enhancement hybrids and 355 haploids. A summary of the resistance noted in the materials tested is listed in Table 1. Of the 1001 entries tested, 31 (3 %) exhibited resistance (Table 2). The largest number of resistant lines (9) occurred among the CIP late blight resistant selections. The most resistant lines with 20% or less defoliation were the foreign varieties Kenya Baraka and Perricholi, foreign breeding stock KOM D542, five CIP late blight resistant lines, the *pinnatisectum*-haploid hybrid 461, and haploid US-W 4056 (Merrimack). In a replicated trial involving 37 lines which previously showed resistance, 8 again demonstrated some resistance (Table 3). They were the foreign variety Ackersegen, the bacterial wilt line MS 35.9, HET Series 1278-2, breeding stocks CEX 69-1, V-2, PI 527315, CFS 69.1 and the *pinnatisectum*-haploid hybrid 461. Families derived from crosses of late blight resistant parents indicated the highest percentage of resistant progeny were from those families where both parents were late blight resistant

(Table 4). Families derived from crosses of varieties with late blight differentials generally showed a lower percentage of resistant progeny. Finally, evaluations were made of species clones identified as late blight resistant and *verrucosum*-IEBN hybrids (Table 5). Resistance was confirmed in species selections, and excellent resistance was noted among the *verrucosum* hybrids.

Colorado potato beetle. Four hundred and twenty-nine clones were evaluated for resistance to natural infestations of Colorado potato beetle in unsprayed plots (Table 6). The largest group tested consisted of 407 selections from the enhancement hybrids of 1995. Of the 429 individuals tested, nine exhibited some resistance (Table 6). Among the most resistant were the *pinnatisectum*-haploid hybrid and eight enhancement hybrids from 1995 (Table 7). In a replicated trial of 25 selections showing resistance in previous trials at Hancock, only the *pinnatisectum*-haploid hybrid was resistant with less than 5 % defoliation.

Early dying. Three hundred and seventy-seven entries were tested for resistance to early dying in a field heavily infested with *Verticillium* wilt (Table 8). The largest group consisted of 361 entries from the enhancement hybrids of 1995. Ten of the 377 entries (3%) expressed resistance. Nine were from the enhancement hybrids and one was the *pinnatisectum*-haploid hybrid (Table 9). Seventy-four entries previously identified as resistant at Hancock were tested in a replicated trial, of which 21 exhibited resistance (Table 10).

Scab. The same materials evaluated for early dying were evaluated in the same field for scab resistance (Table 8). Of the 377 tested and the 74 entries in the replicated trial, 52 exhibited no scab symptoms, and another 84 exhibited slight scab (Table 11). Thus, 36% of those tested had no scab or only slight scab. Clones showing no scab were, four Ham Clones, 47 enhancement hybrids from 1995 and one foreign breeding stock. Those exhibiting slight scab were 73 enhancement hybrids from 1995, one foreign variety, six foreign breeding stocks, two HET Diallel, two species/haploid/tuberosum hybrids and one main haploid.

## Evaluation of Resistance to *Phytophthora infestans* in Mexican 2x(1EBN) Wild Potato Species.

The focus of this study is on Mexican diploid 1EBN wild potato species. 1EBN species were selected because few researchers have studied the resistance to *Phytophthora infestans* present in these Mexican species. Additionally, the diploid nature of the species allows for a straight forward evaluation of resistant genotypes as compared to working at a higher ploidy level. Two *Solanum* species were selected for this study, *S. cardiophyllum* subsp. *cardiophyllum* (cph) and *S. pinnatisectum* (pnt), based on PI evaluations for susceptibility and resistance, respectively. Selection was also based on flowering characteristics and the ability to cross and obtain viable seed. *S. cardiophyllum* subsp. *cardiophyllum* PIs were selected from available plants in the field during early fall 1996, at the UW Lelah Starks Potato Breeding Farm. A total of two PIs of *S. cardiophyllum* subsp. *cardiophyllum* (5 plants each) and seven PIs of *S. pinnatisectum* (5 plants per PI) were involved in the initial crossing scheme.

Interspecific reciprocal crosses were conducted among the initial collection of cph and pnt individuals. Due to interspecific crossing incompatibility, seed was only produced from pnt x cph crosses (Table 12). Four F<sub>1</sub> progeny were selected from one set of parents: 5JK1D, the pnt stylar parent, and 2JK3A, the cph pollen parent. Reciprocal crosses were conducted with these four F<sub>1</sub> progeny and their parents to generate BC<sub>1</sub> families. Again, crossing incompatibility prevented the recovery of BC<sub>1</sub> families from all combinations.

Detached leaf tests were chosen for the determination of late blight phenotypic scores. This decision was based the available resources and the flexibility of being able to screen a large number of individuals in replicated trials over a short period while retaining the screened plant. It is hoped that detached leaf tests can be compared to field trials and/or whole plant evaluations. All detached leaf tests have used MSU96 (provided by Ken Deahl, USDA/ARS, Beltsville, Maryland), a US8 (A-2 mating type), metalaxyl-resistant isolate. Tests with MSU 96 on differential plants representing R<sub>0</sub> through R<sub>10</sub>, minus R<sub>6</sub>, showed resistant reactions on R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub>, indicating the putative presence of Avr8, Avr9 and Avr10 in the *P. infestans* isolate. All parent, F<sub>1</sub> and BC<sub>1</sub> detached leaf evaluations were conducted using three plants of each individual, grown from greenhouse minitubers. A

single leaf was collected from each plant, approximately 6-8 leaf nodes from the top on 6-7 week old plants. Leaves were placed in 150mm petri plates containing paper towels soak with water then inoculated with 30,000 sporangia per ml using a hand sprayer. Petri plates were then parafilm and stored at 18°C. Scoring was done at 6 and 11 days post inoculation. All individuals were retest two weeks after the first evaluation.

The disease severity index used a 0 to 9 scale, with 0 indicating no disease and 9 indicating severe disease development. All disease development was positively identified as originating from *P. infestans* by the identification of sporangia using a stereo microscope. The disease severity index used mean scores from three plants over two consecutive inoculations. Disease indices of 0-3, were considered resistant (R), while indices of 4-5 and 6-9 were consider intermediate and susceptible (S), respectively.

From the initial collection of cph and pnt individuals, both resistant and susceptible individuals were identified from cph, while resistant individuals were identified from pnt (results not shown). From these results, eight F<sub>1</sub> progeny were selected from a cross between R and S individuals, 5JK1D (pnt) and 2JK3A (cph), respectively (Table 13). These eight F<sub>1</sub> progeny segregated 1:1, resistant to susceptible. Four of the F<sub>1</sub>s (two resistant and two susceptible) were used in further crosses. The BC<sub>1</sub> mapping population was selected from a cross between a resistant F<sub>1</sub> and its susceptible parent, 2JK3A (cph). All BC<sub>1</sub> progeny were identified as resistant (0-3) or susceptible (6-9). Segregation was 42:57, resistant to susceptible, not significantly different from a 1:1 ratio. The simple segregation ratio suggests the presence of single dominant resistant locus in the pnt parent. Segregation in the F<sub>1</sub> suggests that the resistant pnt parent is heterozygous for the resistance.

Molecular mapping in the BC<sub>1</sub> population (115 individuals) was conducted using 56 RFLP clones, primarily tomato genomic clones. Markers were selected for a uniform distribution over all 12 chromosomes, as determined by previous mapping studies. The number of markers per chromosome varied, ranging from 3 markers on chromosome 2 to 8 markers on chromosome 11. Marker segregation ratios were primarily 1:1; however 1:2:1 and 1:1:1:1 ratios were observed for markers heterozygous in one or both parents. Linkage analysis was conducted using Linkage1 and MapMaker computer programs.

Both analyses picked up linkage groups corresponding to chromosomes from previous published maps. Marker order was for the most part conserved. Disease severity indexes were entered as qualitative, resistant or susceptible phenotypes. Linkage analysis with the resistant phenotypes found linkage between the resistant locus and markers on chromosome 7. The existence of this putative late blight resistance locus on chromosome 7 differs from previous studies which have located resistance loci on chromosome 4, 5 and 11. Additional markers need to be added before an exact location on chromosome 7 can be determined.

#### **Update on 'Cold Chipping'-Development of 4x Cold Chipping Clones via 4x-2x Breeding.**

Efforts to generate chipping potatoes which chip from cold storage temperatures are an emphasis for many potato breeding programs because of the benefits associated with cold temperature storage. The USDA, ARS Potato Enhancement Project at the UW-Madison envisioned the need to supply the breeding community with such germplasm based on the availability/existence of existing cold chipping germplasm. Wild 2x(2EBN) *Solanum* species were considered as a source for this desired trait. Species were screened for their chipping ability from 36° F after three months storage. Accessions were selected as parents if clones within them produced light, acceptable colored chips direct from storage or after a one-week room temperature (72° F) reconditioning period. Selected 2x(2EBN) accessions, including *S. okadae*, *S. raphanifolium*, *S. sogarandinum*, and *S. sparsipilum*, were crossed with haploids creating haploid-species hybrids. The species' cold chipping trait was transferred to their progeny as clones within families were found to chip acceptably from 36° F direct storage and a higher frequency after one week 72° F reconditioning.

The attempt then was to generate 4x progeny using these haploid-species hybrids along with 4x parents via a 4x-2x breeding scheme. 4x-2x breeding can be complicated when dealing with sterility issues and 2n gamete frequencies of haploid-species hybrids. Tetraploid progeny were developed and tested for chipping quality using the same chipping regime. None of the 4x progeny chipped acceptably direct from 36° F storage, but two clones did after one week of reconditioning (Table 14). Because of these results warmer storage temperatures and longer reconditioning periods were tested in subsequent

years. A higher frequency of clones performed better after two weeks reconditioning from 36° F as well as from the warmer storage temperatures of 40° and 42° F. Results of individual clones are given in Table 15. Hybrids were also developed using the initial 4x progeny derived via 4x-2x crossing and tested under the same chipping regime (Table 16). Again, a higher frequency of clones performed better after two weeks reconditioning out of 36° F and from 40° F storage. A sample of good individual clones are represented in Table 17.

Until the present no 4x clones developed through this research have been identified which chipped acceptably direct from 36° F storage, but a few have been found to chip acceptably after one week and a higher frequency after two weeks reconditioning. It was also found that these clones react more favorably to the warmer, yet still cold, storage conditions of 40° and 42° F. This research has continued by producing numerous 4x clones from both 4x-2x and 4x-4x breeding schemes. We are confident that further progeny will be developed which will be cold temperature storers and ultimately that some clones will chip acceptably direct from 36° F.

#### **Breeding Method to Transfer Germplasm from 2x(1EBN) Mexican Species to the 2x(2EBN) Level using *Solanum verrucosum* as Bridge Species.**

The 2x(1EBN) Mexican species are a rich genetic resource exhibiting extreme resistance to viruses, insects, fungi and nematodes. They are unable to be hybridized with 2EBN diploid species or haploids because of the EBN barrier. To use these species efficiently, means must be found to routinely create hybrids between 2x(1EBN) and 2x(2EBN) species and haploids. Hybrids have been generated using *S. verrucosum* as a bridge species (Table 18). The 1EBN species in this study bring resistance to Colorado potato beetle, late blight, aphids, PLRV, *Verticillium* wilt, and frost (Table 19). The 2x(1EBN) *S. verrucosum*-2x(1EBN) Mexican species hybrids have been successfully crossed with 2x(2EBN) *S. phureja*, *S. chacoense*, and a Tuberosum haploid and also with 2x(1EBN) species and 4x(4EBN) cutivars (Tables 20, 21). An effective means has been found to open the 2x(1EBN) genepool to exploitation for potato improvement using common hybridization techniques coupled with knowledge of 2n gametes and endosperm balance number.



### Crossability of the *Pinnatisectum-Tuberosum* Haploid Hybrid 461.

The *Solanum pinnatisectum*-haploid hybrid 461, derived by double pollination and embryo rescue, has proven to be functionally male sterile, though minute amounts of stainable pollen have been noted. In initial studies, it was also thought to be female sterile, with no seed formed in crosses and only two fruits collected in the field, with only a few seeds, which failed to germinate. Extensive crossing was done with this hybrid using it as a female this summer. With 1422 pollinations made, 129 fruit formed containing 66 seeds (Table 22). No seed or fruit were obtained in crosses with 2x(1EBN) or 6x(4EBN) species. Seed was formed with 2x(2EBN) *S. chacoense*, *S. phureja* and *S. sparsipilium*, haploids and with 4x(4EBN) cultivars. The *pinnatisectum*-haploid hybrid has been demonstrated to be female fertile, though we have not yet attempted to germinate the seeds.

### Acknowledgements

We wish to thank the University of Wisconsin Agricultural Research Stations for their support at the Hancock Agricultural Research Station and the UW Lelah Starks Potato Breeding Farm at Rhinelander, and the superintendents of those stations, Mr. C. J. Kostichka and Mr. B. D. Bowen, respectively, for their support and for the technical assistance of Mr. A. J. Hamernik, all of whom made this work possible.

**Enhancement Table 1.** Summary of 1999 late blight evaluation based on percent defoliation at the UW Agricultural Research Station, Hancock, WI.

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<u>Group</u>	<u># Tested</u>	<u># Resistant</u>	<u>% Resistant</u>
Ham Clones	16	0	0
Foreign Varieties	43	5	12
Foreign Breeding Stocks	22	6	27
Late Blight Differentials	6	1	17
Species/haploid/Tuberosum hybrids	2	0	0
Bacterial wilt	3	0	0
DH Series	12	0	0
HET Series	6	1	17
HVS Series	1	0	0
HP Series	2	0	0
Parent Plot	12	0	0
CIP Late Blight Resistant Clones	20	9	45
Pinnatisectum-haploid hybrids	1	1	100
New Haploids	10	0	0
Peloquin Haploids	29	0	0
Main Haploids	316	5	2
93 Enhancement Hybrids	2	0	0
94 Enhancement Hybrids	98	0	0
<u>95 Enhancement Hybrids</u>	<u>400</u>	<u>3</u>	<u>1</u>
Totals	1001	31	3

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**Enhancement Table 2.** Late blight resistant clones based on percent defoliation.

<u>Selections</u>	<u>% Defoliation</u>	<u>Selections</u>	<u>% Defoliation</u>
<u>Foreign Varieties</u>		<u>CIP LB Resistant Clones</u>	
Ackersegen	30	96-30178-5	20f
Kenya Baraka	5f <sup>1</sup>	-10	20f
Perricholi	10f	-11	20f
Roslin Eburu	50f	-15	30
Uran	50	-20	20f
<u>Late Blight Differentials</u>		-22	30f
1521C (3)	30	-23	20f
<u>HET Series</u>		96-30180-2	40
1278-2 US-W 4056 (Merr) x chc	30	-4	30f
<u>Foreign Breeding Stocks</u>		<u>95 Enhancement Hybrids</u>	
KOM D542	20	97-30010-16	40
CEX 69-1	30	97-30039-11	50
S. tuberosum (CIP 702867)	30	97-30047-9	40
CFS 69.1	30	<u>Main Haploids</u>	
G 7010-1	50	US-W 3694 (Merr)	30
CFL-69-1	50	US-W 3817 (Merr)	30
<u>Pinnatisectum-haploid Hybrid</u>		US-W 4056 (Merr)	20
461	10-20	US-W 2224 (Saco)	30
		US-W 2225 (Saco)	30

<sup>1</sup>f = flowers present on September 17, 1999

**Enhancement Table 3.** Replicated trial of clones previously identified as resistant to late blight in field studies at UW Agricultural Research Station, Hancock, WI.

<u>Selections</u>	<u>I</u>	<u>II</u>	<u>Selections</u>	<u>I</u>	<u>II</u>
Ackersegen	70	40	201401 (R <sub>1</sub> )	95	80
Capella	90	99	201402 (R <sub>2</sub> )	100	99
Capiro	70	80	423653 (R <sub>3</sub> )	100	100
Flava	100	100	201404 (R <sub>4</sub> )	100	95
Libertas	100	100	303148 (R <sub>7</sub> )	100	99
Nevikij	30	90	203901 (R <sub>1</sub> R <sub>2</sub> )	100	100
MS 35.9	20	20	1584C (10) R <sub>3</sub> R <sub>4</sub>	90	99
J101	100	100	2070 AB(31) (R <sub>2</sub> R <sub>4</sub> )	99	95
J103	99	100	215622 (R <sub>1</sub> R <sub>2</sub> R <sub>3</sub> )	100	100
1278-2	60	40	215620 (R <sub>2</sub> R <sub>3</sub> R <sub>4</sub> )	100	100
IAC-2	99	99	215618 (R <sub>1</sub> R <sub>2</sub> R <sub>3</sub> R <sub>4</sub> )	80	90
CEBECO	99	99	303151 multigenic	95	100
CIP M India 1062	90	100	1521C (3)	30	90
PI 499999	99	100	303149 (R <sub>8</sub> )	100	100
CEX-69-1	50	70	423656 (R <sub>10</sub> )	100	100
PI 517317	80	90	201407 (R <sub>2</sub> R <sub>3</sub> )	99	99
V-2	40	70	pnt-haploid 461	10	20
PI 527315	50	40	Check	99	100
PI 527316	100	100			
CFS 69.1	30	60			

**Enhancement Table 4.** Late blight resistance among families from crosses involving late blight resistant parents.

	<u>Families</u>	<u>Total</u>	<u>% Defoliation</u>			<u>% Total</u>
			<u>10</u>	<u>20</u>	<u>30</u>	
1	CEX 69-1 x Libertas	17	1	2	5	47
2	CFS 69.1 x Libertas	29	1	5	6	41
3	CEX 69-1 x CEX 69-1	12	7	1	2	83
4	V-2 x 527315	17	2	2	5	53
5	tbr 583331-13 x 423655 (mooi R <sub>10</sub> )	8	-	-	3	38
6	tbr 583331-2 x 527315	186	20	21	12	28
7	1AX berry 3 x CEX 69-1	80	4	15	5	30
8	1AX berry 3 x 423656 (mooi R <sub>10</sub> )	52	-	3	2	10
9	Atzimba x Pike	12	-	-	-	0
10	Atzimba x Russet Norkotah	8	-	-	-	0
11	CFL 69-1 x Russet Norkotah	24	1	-	4	21
12	CFL 69-1 x W 870	27	1	2	4	26
13	Tollocan x Russet Norkotah	34	2	2	1	15
14	Atzimba x AF 828-5	20	-	-	-	0
15	Atzimba x AF 522-5	1	-	1	-	100
16	Atlantic x CEX 69-1	2	-	1	-	50
17	W 870 x CEX 69-1	12	-	1	1	17
18	Atlantic x 203899	54	-	1	-	2
19	Atlantic x 303151 multigenic	12	-	-	-	0
20	Katahdin x 3RC-8	28	1	1	1	11
21	Russet Norkotah x 201407 (R <sub>2</sub> R <sub>3</sub> )	16	-	1	1	13
22	Superior x 215623	19	-	2	-	11
23	Superior x 303151 multigenic	30	3	2	3	27
24	(BR 63.2 x Katahdin) x 303151 multigenic	36	1	3	2	17
25	(Shepody x Ruta) x Atlantic	18	-	1	1	11
26	Russet Norkotah x 201407 (R <sub>2</sub> R <sub>3</sub> )	15	-	-	-	0
27	423657 x Yukon Gold	27	-	1	1	7



**Enhancement Table 5.** Late blight resistance among species selections and *verrucosum* x 2x(1EBN) hybrids.

<u>Species selections</u>		<u>% Defoliation</u>	<u>Verrucosum hybrids</u>		<u>% Defoliation</u>
G5	grl	80	1412-1	ver x trf	10
G11	grl	<5	-2	"	30
M14	mcd	20	1414-1	ver x cph	30
M15	mcd	30	-2	"	60
TF 73, 1-5-etc	mcd	40	1416-1	ver x pnt	<5
TF 73	mcd	<5	-2	"	30
595398	mcd	<5	1429	etb x ver	30
595399	mcd	5	1413-2	ver x pnt (self?)	10
595401	mcd	30	#2	ver x trf	<5
checks	R. Burbank	80	#4	ver x cmm	10
			checks	R. Burbank	100

**Enhancement Table 6.** Summary of 1999 Colorado potato beetle evaluations based on percent defoliation at the UW Agricultural Research Station, Hancock, WI.

<u>Group</u>	<u># Tested</u>	<u># Resistant</u>	<u>% Resistant</u>
Ham Clones	15	0	0
HET Diallel	2	0	0
Main Haploids	1	0	0
Pinnatisectum-haploid Hybrid	1	1	100
94 Enhancement Hybrids	3	0	0
<u>95 Enhancement Hybrids</u>	<u>407</u>	<u>8</u>	<u>2</u>
Totals	429	9	2

**Enhancement Table 7.** Potential Colorado potato beetle resistant clones based on percent defoliation.

<u>Selections</u>	<u>Parentage</u>	<u>% Defoliation</u>
pnt-haploid hybrid 461	US-W 13089 (Sebago) x pnt PI 275233	<5
97-30056-6	Atlantic x 79HP 59.3	40
-11	"	40
-31	"	30
97-30087-2	A84 118-3 x 12380-9 (DH x H)	30
-7	"	30
97-30088-1	AF 303-5 x 12380-9 (DH x H)	40
-2	"	30
97-30100-1	(Russet Nugget x 79HP 70-7) x sib	20
Check	Norland	60-100

**Enhancement Table 8.** Summary of the 1999 early dying findings based on percent defoliation at the UW Agricultural Research Station, Hancock, WI.

<u>Selections</u>	<u># Tested</u>	<u># Resistant</u>	<u>% Resistant</u>
Ham Clones	14	0	0
94 Enhancement Hybrids	1	0	0
95 Enhancement Hybrids	361	9	2
<u>Pinnatisectum-haploid Hybrid</u>	<u>1</u>	<u>1</u>	<u>100</u>
Totals	377	10	3

**Enhancement Table 9.** Potential *Verticillium* wilt resistant clones based on percent defoliation.

<u>Selections</u>	<u>Parentage</u>	<u>% Defoliation</u>
97-3098-6	2070 AB (31)R <sub>2</sub> R <sub>4</sub> x W1005	40
97-3125-3	W 231 x IAC-2	40
97-3130-10	W 231 x CEX 69-1	30
97-30045-1	Ranger Russet x 12380-9 (DH x H)	30
97-30076-1	Russet Nugget x 90 DH 161-2	40
97-30080-5	A 86 102-6 P71 x 12380-8 (DH x H)	40
97-30086-12	A 86 102-6 P71 x 12380-9 (DH x H)	40
97-30088-2	AF 303-5 x 12380-9 (DH x H)	40
-8	"	40
pnt-haploid 461	US-W 13089 (Sebago) x pnt PI 275233	40
checks	Russet Burbank	90-100

**Enhancement Table 10.** Replicated trial of clones previously identified as resistant to early dying in field studies at the UW Agricultural Research Station, Hancock, WI.

<u>Selections</u>	<u>Parentage</u>	<u>% Defoliation</u>	
		<u>I</u>	<u>II</u>
Vekaro		20	20
Kenya Baraka		10	20
Uran		30	30
KOM D 149		40	30
KOM D 542		30	40
KOM F 558		40	30
KOM F 754		30	20
LT-1		20	20
CEX-69-1		40	20
V-2		10	20
BL 1-10		40	20
79V 106-18		30	20
CFS 69.1		40	30
CIP 379706.34		30	40
TS-9		20	20
8-5		30	20
8-34		30	30
1278-2	US-W 4056 (Merr) x chc	20	5
11670-1	[US-W 973 (W 231) x chc] x US-W 4056 (Merr) x chc	40	40
1267-2R	US-W 1841 (Chip) x chc	10	20
1275-1 R	US-W 3817 (Merr) x spl	20	30
checks	Russet Burbank	100	100

**Enhancement Table 11.** Potential scab resistant clones based on field test at the UW Agricultural Research Station, Hancock, WI.

<u>Selections</u>	<u>Parentage</u>	<u>I</u>	<u>II</u>
<u>Foreign Varieties</u>			
Ackersegen		0	+sl
<u>Foreign Breeding Stocks</u>			
MPI 44.335/128		+sl	+sl
MPI 49.747/31		0	+sl
KOM F 558		+sl	+sl
KOM F 754		+sl	+sl
MPI 55.957/96		+sl	+sl
79 V 100-40		0	0
<u>HET Diallel</u>			
11670-1	[US-W 973 (W 231) x chc] x [US-W 4056 (Merr) x chc]	+sl	+sl
-2	"	+sl	0
<u>Species/haploid/Tuberosum Hybrids</u>			
1267-2R	US-W 1841 (Chip) x chc	+sl	+sl
1275-1R	US-W 3817 (Merr) x spl	+sl	+sl
<u>Main Haploids</u>			
US-W 4440	Merrimack	+sl	0
<u>Ham Clones</u>			
Ham 27-2	H25 [(US-W 973 (W 231) x chc) x rap 296126] x W 870	0	
Ham 28-4	H25-9 [(US-W 973 (W 231) x chc) x rap 296126] x W 1005	0	
-7	"	0	
-8	"	0	
<u>Enhancement Hybrids</u>			
95 Enhancement Hybrids		0 (47)	
95 Enhancement Hybrids		+sl (73)	

**Enhancement Table 12.** Crosses conducted to generate BC<sub>1</sub> populations.

<u>Parents</u>					
<u>Styllar</u>	<u>Pollen</u>	<u>Poll</u>	<u>Fruit</u>	<u>Seeds</u>	<u>% Fruit/Poll</u>
cph <sup>a</sup>	pnt	2601	1	4	0.04
pnt	cph	810	64	1882	8.00
F <sub>1</sub> <sup>b</sup>	2JK3A	678	261	---	38.50
F <sub>1</sub>	5JK1D	497	2	---	0.40
2JK3A	F <sub>1</sub>	152	0	---	0.00
5JK1D	F <sub>1</sub>	114	31	---	27.20

<sup>a</sup> cph = *S. cardiophyllum* subsp. *cardiophyllum*, 2 PIs, five individuals each

pnt = *S. pinnatisectum*, 7 PIs, five individuals each

<sup>b</sup> F<sub>1</sub> = Four progeny from the cross between 5JK1D x 2JK3A, pnt and cph, respectively

**Enhancement Table 13.** Disease severity index  $\pm$  standard deviation for parental plants inoculated with *Phytophthora infestans* isolate US-8.

<u>Species<sup>a</sup></u>	<u>Plant Introduction</u>	<u>Plant Code</u>	<u>Mean Disease Severity Index</u>	<u>Assigned Phenotypes</u>
cph	347759	2JK3A	7.1 $\pm$ 1.86	S
pnt	253214	5JK1D	0.0	R
pnt x cph <sup>b</sup>	---	972703	0.9 $\pm$ 0.18	R
pnt x cph	---	972704	6.0 $\pm$ 0.00	S
pnt x cph	---	972801	6.0 $\pm$ 1.41	S
pnt x cph	---	972802	0.0	R

<sup>a</sup> cph = *S. cardiophyllum* subsp. *cardiophyllum* and pnt = *S. pinnatisectum*

<sup>b</sup> pnt x cph = F<sub>1</sub> progeny from the cross 5JK1D x 2JK3A

**Enhancement Table 14.** Mean chipping results of enhancement hybrid 4x-2x progeny.

Chip Score	36 F			40 F		
	D3mo	R1wk	R2wk	D3mo	R1wk	
	# (%)	# (%)	# (%)	# (%)	# (%)	
3-5		2 (2)	28 (29)	2 (2)	20 (21)	
5.1-7	2 (2)	31 (26)	30 (31)	10 (10)	33 (34)	
7.1-10	115 (98)	84 (72)	38 (40)	86 (88)	44 (45)	
Total	117	117	96	98	97	

Chip Score (1 light to 10 dark)

**Enhancement Table 15.** Favorable results of a few enhancement hybrid 4x-2x clones.

Clone	36 F			40 F		
	D3mo	R1wk	R2wk	D3mo	R1wk	
97-4143-1*	8.8	7.3	5.0	8.0	4.5	
97-4150-3	9.5	5.8	3.0	6.0	4.0	
97-4159-1	8.0	4.5	3.0	7.5	3.0	
97-4160-3	10.0	8.5	4.0	10.0	3.0	
97-4166-1	9.5	8.3	4.0	7.0	4.0	
97-4188-1	10.0	8.5	5.0	6.5	3.0	
97-4188-2	10.0	8.5	5.0	3.5	3.0	

Chip Score (1 light to 10 dark)

97-4143-1\* = W1005 x [US-W 357 (Merr) x tar 473238 (AH60-2)]

97-4150-3 = Atlantic x [US-W 357 (Merr) x tar 473238 (AH60-22)]

97-4159-1 = Atlantic x [US-W 357 (Merr) x tar 473238 (AH60-29)]

97-4160-3 = Langlade x [US-W 357 (Merr) x tar 473238 (AH60-29)]

97-4166-1 = [US-W 973 (Wis AG 231) x chc) x rap 310998 (H28-7)] x W1005

97-4188-1,2 = Langlade x [(US-W 973 (Wis AG 231) x chc) x rap 310998](D1-29)]

**Enhancement Table 16.** Chip results of 4x progeny developed using 4x parents derived from 4x-2x crossing.

Chip	36 F		40 F	
	D3mo	R1wk	D3mo	R1wk
Score	# (%)	# (%)	# (%)	# (%)
3-5		1 (2)	14 (23)	24 (39)
5.1-7	1 (2)	13 (20)	27 (43)	24 (39)
7.1-10	62 (98)	49 (78)	21 (34)	13 (21)
Total	63	63	62	61

Chip Score (1 light to 10 dark)

**Enhancement Table 17.** Favorable results of a few 4x progeny derived from 4x parents developed via 4x-2x crossing.

Clone	36 F		40 F	
	D3mo	R1wk	D3mo	R1wk
97-4178-21*	9.0	7.0	4.0	4.0
97-4183-3	10.0	7.8	5.5	4.0
97-4184-1	10.0	7.3	4.0	4.0
97-4184-7	9.5	9.0	4.5	7.5
97-4187-2	8.3	7.5	5.0	4.0

Chip Score (1 light to 10 dark)

97-4178-21\* = [[[(US-W 973 (Wis AG 231) x chc) x rap 296126] x W870]] (Ham 27-2)] x W1005  
 97-4183-3 = [[[(US-W 973 (Wis AG 231) x chc) x rap 310998] x Atlantic] (Ham 29-1)] x Ranger Russet  
 97-4184-1,7 = [[[(US-W 973 (Wis AG 231) x chc) x rap 310998] x Atlantic] (Ham 29-1)] x W1005  
 97-4187-2 = [Katahdin x 1757 Ruta Q26506A] x [[[(US-W 973 (Wis AG 231) x chc) x rap 310998] x Atlantic] (Ham 29-1)]

**Enhancement Table 18.** Successful hybridization of *S. verrucosum* with 2x(1EBN) species.

<u>Cross</u>	<u># Poll</u>	<u># Fruit</u>	<u># Seeds</u>		<u>Seed/Fruit</u>
			<u>Plump</u>	<u>Thin</u>	
ver 161173 x plt 184770	6	4	12	78	3
" x ver 275256	5	2	209	-	105
ver 275756 x cph 570612	2	1	9	37	9
" x chn 338615	7	4	1		<1
" x plt 184773	8	4	4	7	1
" x sto 160226	5	2	11	36	6
ver 498010 x cph 570612	15	9	78	120	9
" x plt 184770	12	6		125	0
" x plt 184773	9	5	-	60	0
" x sto 160226	10	3	11	80	4
" x ver 310966	6	5	510		102
ver 498062 x sto 275249	2	1	-	83	0
ver 558487 x cph 283062	7	3	72	-	24
" x chn 338615	10	3	1		<1

**Enhancement Table 19.** Summary of 2x(2EBN) *S. verrucosum*-2x(1EBN) hybrids.

<u>Code</u>	<u>Parentage</u>	<u>Hybrid</u>	<u>Trait</u>
1411	ver 275250 x trf 283065	yes	late blight
1412	ver 160228 x trf 283104	yes	late blight
1413	ver 558484 x pnt 190115	?	CPB
1414	ver 161173 x cph 347759	yes	CPB
1415	" x trf 283104	yes	aphid
1416	ver 498062 x pnt 257235	yes	late blight
1429	etb 498311 x ver 195171	?	PLRV
#2	ver 195170 x trf 255539	yes	<i>Vertillium</i> wilt
#4	ver 195171 x cmm 458319	yes	frost



**Enhancement Table 20.** Summary of crossing for *S. verrucosum*-2x(1EBN) hybrids with 2x(1EBN), 2x(2EBN) and 4x(4EBN) selections.

<u>Parentage</u>	<u># Poll.</u>	<u># Fruit</u>	<u># Seeds</u>	<u>Seeds/Fruit</u>
1412-1 (ver x trf) x chc	3	2	2	1
" x trf	6	1	8	8
1412-2 (ver x trf) x pnt	8	2	2	1
1414-1 (ver x cph) x chc	3	2	87	44
" x phu	2	1	32	32
1414-2 (ver x cph) x chc	3	2	116	58
1416-1 (ver x pnt) x pnt	5	4	4	1
#2 (ver x trf) x chc	5	3	2	<1
" x trf	9	4	29	7
#4 (ver x cmm) x chc	12	7	39	6
" x cmm	2	1	23	23
" x (DH x DH)	5	1	1	1
1429 (etb x ver) x chc			1	
US-W 3458 (Merr) x 1414-1 (ver x cph)	5		18	
G 23 (MPI 49.540/2) x 1414-1 (ver x cph)	12	1	8	8
Q 20723, A2 (4x) x 1412-1 (ver x trf)	3	3	1	<1

**Enhancement Table 21.** *S. verrucosum*-2x(1EBN) hybrid crosses with 2x(1EBN), 2x(2EBN) and 4x(4EBN) selections in 1999.

<u>Cross</u>	<u># Poll</u>	<u># Fruit</u>	<u># Seeds</u>	<u>Seeds/fruit</u>
ver-2x(1EBN) x cmm	3	2	1	0.5
" x chc	21	6	473	79
" x phu	6	0	0	0
" x haploids	299	1	17	17
" x adg	6	0	0	0
" x cultivars	237	14	2	0.1
haploids x ver-2x(1EBN)	4068	196	38	0.2
cultivars x "	402	8	13	1.6

**Enhancement Table 22.** Crossability studies with *S. pinnatisectum*-haploid hybrid 461 as a female with 2x(1EBN), 2x(2EBN) , 4x(2EBN), 4x(4EBN) and 6x(4EBN) male parents.

<u>Species/hybrids</u>	<u># Used</u>	<u># Poll</u>	<u># Fruit</u>	<u># Seeds</u>	<u>Seeds/fruit</u>
2x(1EBN)	9	303	0	0	0
2x(2EBN)	8	793	97	63	0.6
4x(2EBN)	3	25	1	0	0
4x(4EBN)	4	209	31	3	0.1
6x(4EBN)	3	92	0	0	0
Totals	27	1422	129	66	0.5

## NRSP-6: INTER-REGIONAL POTATO INTRODUCTION PROJECT

J. B. Bamberg and M. W. Martin

### **Introduction, Preservation, Classification, Distribution and Evaluation of *Solanum* Species.**

#### **Introduction of New Stocks**

Dr. Spooner, in collaboration with Alberto Salas (CIP, Peru), Zozimo Huaman (CIP, Peru), and Rafael Vinci (INIA, Peru) participated in a successful expedition to collect wild species of potato in Peru from March 8 to April 25, 1999. This collection trip resulted in 101 new accessions of *Solanum* species.

Dr. Bamberg, in collaboration with Charles Fernandez (US Potato Genebank), Stephen Kiru (VIR, St. Petersburg, Russia), Joseph Pavek (ARS Potato Breeder, Aberdeen, Idaho), and Sylvia Pavek (wife of ARS potato breeder), participated in a successful expedition to the southwest United States to obtain new materials for the collaborative intergenebank research project.

A total of 145 accessions were assigned PI numbers in 1999, and are now available from the NRSP-6 *Solanum* germplasm collection: 80 *in vitro* clones, 58 quarantine clones, and seven accessions from the southwest United States.

In 1999, 91 new accessions were planted out in the spring quarantined increase. Of the 91 accessions, 62 germinated. Fifty-eight of these were released and added into the collection (four were virus suspect and not released). Of the 58 accessions, 41 were from Spooner's 1997 Mexico collection, 16 were from Spooner's 1998 Peru collection, and one from the 1992 Columbia collection trip.

A total of 88 clones were added to the *in vitro* collection in 1999 as foreign varieties or genetic stocks.

#### **Preservation and Increase of Stocks**

In 1999, 178 accessions were increased as botanical seed populations.

This year a total of 720 potato spindle tuber viroid (PSTV) tests were performed on seed increase parents, seed lots and research materials. Germination tests were performed on 993 accessions, and ploidy determinations were done on 97 accessions.

#### **Classification**

Dr. Spooner continues to resolve problems in taxonomic classification which impede efficient documentation and use of the germplasm. This year an extensive study was conducted which suggests several species in the series *Longipedicellata* are not actually significantly different. Insights gained from this and similar studies will allow accessions to be assigned stable species names based on empirical differences.

#### **Distribution**

NRSP-6 distributed 5,132 units of seed, 21 tuber families and 809 *in vitro* stocks to clientele in 18 states of the United States and 10 other countries. Internally, NRSP-6 used 9,931 units of seed for chromosome counts, germination tests, identification and taxonomic check plantings, *in vitro* maintenance, seed increases, PSTV tests, and miscellaneous plantings. The volume and types of stocks sent to various consignee categories are summarized in NRSP-6 Table 1.

## Evaluation of Stocks

The project's mission with respect to evaluation is to locate and characterize useful traits so that the best materials and most efficient approaches are available for subsequent germplasm enhancement.

### 1. Late Blight Screening

New forms of the late blight pathogen have developed into a severe threat to the US potato crop. In 1999 we continued four cooperative projects:

1) BC, Canada with Dr. Ken Ng: This project characterized segregation for extreme late blight resistance in a family of the South American Series Tuberosa member *S. okadae*.

2) Cornell, New York: Dr. Fry characterized segregation for extreme late blight resistance in a family of the South American Series Tuberosa member *S. microdontum*.

3) Lansing, Michigan with Dr. Douches: This project involves inoculated greenhouse testing of selected late blight resistant genotypes.

4) Toluca, Mexico with Hector Lozoya: This project did field screening for resistance in various South American and Mexican species, as well as Russian elite breeding families.

### 2. Tuber Traits

Wild species do not produce tubers in the long days of Sturgeon Bay summers, so their tuber traits cannot be assessed in the field. A project was initiated in 1993 in which wild accessions are being systematically

crossed with adapted (cultivated) forms to produce F2 true seed families. We also found and successfully tested a site for wild species tuber production at Weslaco, TX (in cooperation with TAES). This will allow more efficient production of tubers and allow evaluation under field conditions (for such traits as calcium accumulation potential).

### 3. Frost Hardiness

In cooperation with Dr. J. Palta and YuKuang Chen, work was continued on recurrent selection for earliness, good tuber characteristics, and frost resistance. Progress was made in generation of substitution backcross families with cold sensitive genomes within cold hardy cytoplasm.

### 4. Tuber Calcium

Tuber calcium has been shown to be closely associated with resistance to important storage rots and other tuber quality traits. F2 hybrids between clones which accumulate very high calcium in a high calcium environment and clones which accumulate very little calcium in the same environment were analyzed. High calcium accumulation and cold sprouting vigor were not well correlated. Tuber calcium segregation within the family was continuous between the parental levels. These materials should be a valuable tool for investigating the physiology and genetics of tuber calcium.

### 5. RAPDs to estimate vulnerability of alleles in the genebank

RAPDs were used to characterize populations of two very heterogeneous wild potato species. About 25 plants in each

population were individually tested to reveal "allele" frequencies. Allele frequencies less than 25% were not uncommon, but these markers were almost always fixed or nearly fixed in another population. Therefore, vulnerable alleles (i.e., ones which have a good chance of being lost from the genebank using current seed increase methods) appear to be very rare.

#### 6. Screening the Wild Species for Root Mass

The mini-core collection was screened for root mass in the screenhouse in Perlite. Significant differences were found which parallel those of previous work. This information may provide insights into breeding for water and fertilizer use efficiency.

#### 7. Characterization for Utility Traits

The success of using *Solanum* germplasm for breeding is influenced by relative plant vigor, flowering, pollen shed and pollen viability. Characterization of the collection for these traits continued in 1999.

#### **Inter-genebank Collaboration**

The Association of Potato Intergenebank Collaborators (APIC) has initiated a joint research project to investigate the effects of seed increases on the genetic integrity of germplasm conserved *ex situ*, and whether germplasm in genebanks still represents the *in situ* populations from which they were collected. Work on the final phase, finding factors which predict the patterns of diversity among accessions, has been submitted for publication. Some findings defy conventional wisdom, such as the idea that genetic diversity is correlated with spacial separation of collections. Results from this work will guide collection methods to maximize diversity. New

samples of *S. jamesii* were collected in New Mexico and Arizona, expanding the range of our research samples and adding unique germplasm to the genebank. The 8th meeting of APIC was held in conjunction with the Global Potato Conference in New Delhi, December, 1999. APIC members largely organized and presented the papers for the session: "Genetic Resources and Crop Improvement".

#### **Visitors from other Countries**

Dr. Peter Dolnicar -  
Ljubjana, Slovenija  
Dr. Janet Seabrook -  
Fredricton, New Brunswick, Canada  
Dr. Lin Gau -  
Fredricton, New Brunswick, Canada  
Dr. Quin Chen -  
Lethbridge, Alberta, Canada  
Dr. Ana Peralta -  
Uruguay  
Dr. Beatriz Melcho -  
Uruguay  
Dr. Luis Curbelo -  
Uruguay  
Dr. Carlos Colafranceschi  
Uruguay

#### **Usefulness of Findings**

NRSP-6's purpose is to provide a ready source of raw materials, technology and information which support potato enhancement, breeding and research in the US and around the world. Thus, one way the success of NRSP-6 can be measured is by the use of NRSP-6 germplasm in the pedigrees of new, improved potato cultivars. Two cultivar releases were published in the American Journal of Potato Research in 1999: 'Quaggy Joe', and 'Reba'. Both are known to have wild species in their pedigrees. Another is in the use of NRSP-6 stocks in more basic research programs

which also ultimately contribute to human utilization of the potato crop, these being reflected in publications: 89 papers, 30 abstracts, and 3 theses report the use of NRSP-6 *Solanum* introductions this year.

**NRSP-6 Table 1.** Volume and types of stocks distributed in 1999.

Category	Units <sup>1</sup>					PIs
	S	TF	IVS	FSG	TOTAL	
Domestic	3,689	18	563	51	4,321	2,616
Foreign	1,442	3	246	108	1,800	1,177
NRSP-6 <sup>2</sup>	9,931	0	0	0	9,931	1,388
Total	15,062	21	809	159	16,052	5,181

<sup>1</sup> Types of stocks sent/(number of seeds, tubers or plantlets per standard shipping unit): S= True Seeds/(50), TF= Tuber Families/(10), IVS=*In Vitro* Stocks/(1), FSG=Fine Screening Genotypes/(1).

<sup>2</sup> Includes chromosome counts, germination tests, ID and taxonomic check plantings, in vitro maintenance, seed increases, PSTV tests, and miscellaneous plantings and NSSL seed backup.



## EAST REGIONAL POTATO TRIALS

**Jonathan A. Sisson III**, Assistant Scientist,  
University of Maine Agricultural and Forest  
Experiment Station, Presque Isle, ME.

**Cooperators in 1999:** Florida: J. Marion White and Pete Weingartner; Maine: Gregory Porter; New Brunswick: Henry DeJong and Peter Scott; North Carolina: Craig Yench; New Jersey: Mel Henninger; Long Island, New York: Joe Sieczka; Upstate New York: Don Halseth; Ohio: Matt Kleinhenz; Prince Edward Island: Walter Arsensault; Quebec: Pierre Turcotte and Gilles Hamel; and Virginia: Rikki Sterrett.

Thirty-four trials were conducted in seven states and three Canadian Provinces. Twenty named varieties and 11 numbered clones were available to the cooperators. Seed for all clones and varieties were grown by the Maine State Seed Potato Board at Porter Farm. Seedpieces were prepared, cut, and suberized by the staff at the University of Maine Agricultural and Forest Experiment Station in Presque Isle, Maine. Cultural practices were generally similar to those used by commercial growers near each location.

**Objectives:** The objectives of this regional project are (1) to develop pest-resistant, early maturing, long-dormant varieties that will process from cold storage; (2) to evaluate new and specialty varieties developed in the Northeast; (3) to determine climatic effects on performance to develop predictive models for potato improvement; and (4) determine heritability/linkage relationships and improve the genetic base of tetraploid cultivated varieties.

**Results:** Total yield, marketable yield, specific gravity, tuber size, tuber defects, chip color results, boil and bake results are presented in East Region Trial Tables 1-5. For round whites, Keuka Gold and NY112 had the highest yields (total and marketable) at most locations. Atlantic, Katahdin, and AF1615-1 also yielded well at most locations. MaineChip, Atlantic and Snowden had the highest specific gravities at most sites. NY112 had specific gravity readings of four to eight points less than Atlantic, and Keuka Gold and AF1615-1 were about 10 points less than the standard. B0766-3, NY112, Atlantic, Yukon Gold, Eva, and Katahdin sized well in most trials. Kennebec, Katahdin, Eva, and AF1615-1 had a high incidence of sunburn in some trials. Atlantic, Yukon Gold, and Katahdin had some hollow heart

problems. Snowden, NY112, and NY115 had few internal or external defects in 1999. Eva, MaineChip, Snowden, B0766-3, NY112 and NY115 have chipped well out of the field and MaineChip, B0766-3, NY112, and NY115 have chipped well out of warm storage. Eva, Keuka Gold, AF1437-1, B0766-3, NY112 and NY115 scored well in boiling tests and Eva, B0766-3, NY112 and NY115 scored well in baking tests.

Umatilla Russet had a higher marketable yield than Russet Burbank, Russet Norkotah, and Shepody in a majority of comparisons. It had a higher specific gravity than the three standards in all comparisons. The three Russet Norkotah clones, Shepody, A81386-1, and W1099Rus had the lowest specific gravity values. Shepody, Russet Legend, Russet Norkotah-3, Russet Norkotah-8, and A86102-6 produced the largest tubers. Russet Burbank, Umatilla Russet, Shepody, and A86102-6 had over 10% of tubers misshapen while Russet Norkotah-3, Russet Norkotah-8, A81386-1, and W1099Rus had over 5% of tubers misshapen. Russet Burbank, Russet Norkotah-3, and A86102-6 have had hollow heart problems. All of the russet clones scored well in the boiling tests. Russet Legend, A8495-1, A84118-3, and A86102-6 had good baking scores.

The NE-184 rating scale, which is widely referenced in more detailed reports from the individual states, is given in East Region Trial Table 6.

**East Region Trial Table 1.** Total yields (cwt/acre) for 20 named varieties and 11 numbered clones grown at 15 locations in the Eastern United States and Eastern Canada.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NC	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	OH	PEI	QU1 <sup>3</sup>	QU2 <sup>3</sup>	QU3 <sup>3</sup>	VA	Mean
<u>Round Whites</u>																
Atlantic	403	372	426	438	316	158	507	705	489	188	383	286	340	288	189	389
Eva (NY103)	391	253	348	411		144	516	654	410	221	325	187	341	274	305	341
Itasca	323	321	360	418		142				192		325	446			316
Katahdin	426	357	357	449	383	148	598	654	471	238	415	298	374	273	224	391
Kennebec	359	376	357	387	337	161	713	696	427	242	441	295	366	318	160	394
Keuka Gold (NY101)	467	441	410	461	443	169	653		568		567	346	459	263	247	423
MaineChip	286	271		224								101	226			222
Snowden	334	355	341	451		163	593		477	250		233	362	193		341
Superior	373	310	392	313	233	144	430	701	350	231	389	234	288	266	232	329
Yukon Gold	376	344	342	294	321	125	333	615	426	218	350	248	352	287	264	326
AF1437-1	346	363	318	341	311	113	424	752	465	255	323	248	296	259	177	333
AF1615-1	431	349	396	419		128	618	751	416	248	390	178	345	271	138	363
B0766-3	319	359	317	364	298	140	506	733	466	221	368	213	329	275	211	341
NY112	432	405	416	413	392	172	609	830	508	209	456	259	410	246	267	402
NY115	353	402	318	438	263	77	458	740	442	175	355	234	279	295	211	336



East Region Trial Table 1. Continued.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NC	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	OH	PEI	QU1 <sup>3</sup>	QU2 <sup>3</sup>	QU3 <sup>3</sup>	VA	Mean
<u>Red Clones</u>																
Chieftain	409		375	411		179	524		432			250	369	327		364
Dark Red Norland	348		334	340		132	388		364	189		232	318		266	291
NorDonna	330		386	411		142	411		418	161		249	280		184	297
<u>Russets/Long Whites</u>																
R Burbank	342		304		355				486		284	258	401			347
R Legend	309		276	344	225				353		240	255	300	177		275
R Norkotah	312		405		201	137	317	513	389		397	189	279	248	167	296
R Norkotah-3	388		437	300	359	184	560	532	449		358	362	313	271	68	352
R Norkotah-8	341		460	340	304	170	506	579	500		291	284	368	298	134	352
Shepody	356		435	350			578		418			305	370	258		384
Umatilla Russet	405		430	411	371		703	692			314	271	397	276	194	406
A8495-1	329		354	236	282		453		425		256	304	379	229	66	301
A81386-1	335		351		306	169	472		457			244	311	255	169	307
A84118-3	282		288		373		435				253	237	296	205		296
A84180-8	337		348		275		497				258	290	380	253		330
A86102-6	369		422								339	316	344	245		339
W1099Rus	321		355	342								291	293	222		304

<sup>1</sup>Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).

<sup>2</sup>The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).

<sup>3</sup>There were three trials in Quebec, Canada; Rawdon (QU1), St-Ubalde (QU2), and La Pocatiere (QU3).

**East Region Trial Table 2.** Marketable yields (cwt/acre) for 20 named varieties and 11 numbered clones grown at 15 locations in the Eastern United States and Eastern Canada.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NC	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	OH	PEI	QU1 <sup>3</sup>	QU2 <sup>3</sup>	QU3 <sup>3</sup>	VA	Mean
<u>Round Whites</u>																
Atlantic	380	344	391	394	296	154	475	558	394	152	353	259	260	252	162	345
Eva (NY103)	361	228	299	362		137	471	571	355	187	314	158	266	274	279	304
Itasca	305	297	333	376		137				91		281	338			270
Katahdin	372	310	328	382	342	139	567	557	393	174	384	266	279	234	192	341
Kennebec	309	287	232	352	266	150	598	460	322	118	417	240	262	255	97	309
Keuka Gold (NY101)	436	415	385	410	413	163	585		524		549	313	412	242	196	388
MaineChip	257	244		193								59	116			174
Snowden	317	337	318	419		154	556		432	182		188	261	170		303
Superior	350	284	352	285	216	140	381	591	330	165	380	221	248	244	195	297
Yukon Gold	351	307	305	334	308	118	303	509	362	174	337	236	288	268	226	295
AF1437-1	346	312	286	297	295	101	363	547	362	199	305	232	231	202	140	279
AF1615-1	388	294	360	279		124	572	680	365	168	374	125	305	246	89	319
B0766-3	276	303	301	335	291	134	468	596	349	163	360	177	288	248	188	298
NY112	395	393	401	368	379	168	578	735	471	175	445	237	364	230	234	372
NY115	319	350	281	377	250	66	423	676	395	135	328	197	210	265	158	295

East Region Trial Table 2. Continued.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NC	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	OH	PEI	QU1 <sup>3</sup>	QU2 <sup>3</sup>	QU3 <sup>3</sup>	VA	Mean
<u>Red Clones</u>																
Chieftain	390		333	370		167	439		399			219	302	299		324
Dark Red Norland	325		261	299		106	339		333	152		185	254		192	245
NorDonna	300		367	358		120	292		381	117		191	230		84	244
<u>Russets/Long Whites</u>																
R Burbank	251		277		132				232		192	175	200			208
R Legend	283		222	320	216				255		209	213	275	145		238
R Norkotah	289		351		187	124	255	358	252		372	167	188	225	98	239
R Norkotah-3	335		353	267	292	153	412	271	271		336	266	245	221	23	265
R Norkotah-8	310		407	313	276	156	395	341	347		257	267	266	270	69	283
Shepody	272		344	294			207		244			251	253	232		262
Umatilla Russet	348		373	366	323		409	317			246	221	284	237	120	295
A8495-1	312		323	172	256		326		283		171	266	275	199	17	236
A81386-1	297		317		272	159	374		282			190	246	212	110	246
A84118-3	254		269		332		338				169	214	223	168		246
A84180-8	300		281		225		306				213	260	341	210		267
A86102-6	319		311								267	258	170	210		256
W1099Rus	265		334	315								262	208	191		262

<sup>1</sup>Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).<sup>2</sup>The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).<sup>3</sup>There were three trials in Quebec, Canada; Rawdon (QU1), St-Ubalde (QU2), and La Pocatiere (QU3).

**East Region Trial Table 3.** Specific gravities (1.0 excluded) for 20 named varieties and 11 numbered clones grown at 15 locations in the Eastern United States and Eastern Canada.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NC	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	OH	PEI	QU1 <sup>3</sup>	QU2 <sup>3</sup>	QU3 <sup>3</sup>	VA	Mean
<u>Round Whites</u>																
Atlantic	97	98	98	71	90	78	80	70	88	81	94			80	78	86
Eva (NY103)	78	77	87	61		67	67	62	72	66	80			81	68	72
Itasca	80	80	84	57		74				64						73
Katahdin	85	80	85	58	72	65	56	60	76	64	81			77	60	70
Kennebec	83	83	86	60	72	74	65	61	75	68	83			81	63	73
Keuka Gold (NY101)	83	84	81	63	74	67	70		75		87			67	69	75
MaineChip	101	106		79												95
Snowden	97	98	101	68		78	81		86	77				81		85
Superior	85	78	86	69	74	72	63	62	71	67	79			78	67	73
Yukon Gold	94	101	90	64	87	74	80	68	81	73	88			75	69	80
AF1437-1	65	62	70	50	69	61	49	58	62	60	63			73	55	61
AF1615-1	94	84	87	60		72	67	61	77	71	81			76	67	75
B0766-3	87	83	92	66	79	76	76	62	84	75	90			78	69	78
NY112	91	92	91	59	84	75	72	66	78	70	88			77	70	78
NY115	86	80	89	59	77	71	65	64	77	75	85			78	68	75

East Region Trial Table 3. Continued.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NC	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	OH	PEI	QU1 <sup>3</sup>	QU2 <sup>3</sup>	QU3 <sup>3</sup>	VA	Mean
<u>Red Clones</u>																
Chieftain	73		70	55		63	64		70					78		68
Dark Red Norland	69		68	56		83	61		63	63					56	65
NorDonna	75		78	57		79	62		73	60					62	68
<u>Russets/Long Whites</u>																
R Burbank	82		77		71				82		85					79
R Legend	91		86	56	81				76		100			96		84
R Norkotah	76		78		70	71	71	64	67		79			84	70	73
R Norkotah-3	84		79	50	72	73	69	65	76		79			94	71	74
R Norkotah-8	81		78	53	73	73	70	64	71		74			87	68	72
Shepody	83		70	67			68		83					98		78
Umatilla Russet	92		80	66	86		76	76			94			98	71	82
A8495-1	92		82	55	80		82		77		88			102	75	81
A81386-1	80		71		69	71	69		82					90	64	75
A84118-3	95		90		80		74				94			93		88
A84180-8	85		79		73		70				94			92		82
A86102-6	91		84								91			101		92
W1099Rus	84		78	52										83		74

<sup>1</sup>Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).<sup>2</sup>The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).<sup>3</sup>There were three trials in Quebec, Canada; Rawdon (QU1), St-Ubalde (QU2), and La Pocatiere (QU3).

**East Region Trial Table 4.** Percent of marketable yield of tubers in the 2.5 to 4 inch size range for round whites and reds, and russets greater than eight ounces for 20 named varieties and 11 numbered clones grown at 10 locations in the Eastern United States and Eastern Canada.

Clone	ME1 <sup>1</sup>	ME2 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	PEI	VA	Mean
<u>Round Whites</u>											
Atlantic	70	70	72	25	83	56	69	61	76	58	65
Eva (NY103)	57	74	47	34		75	76	58	69	80	63
Itasca	51	53	57	6							42
Katahdin	61	60	62	26	79	68	72	54	81	67	63
Kennebec	64	62	70	22	68	64	54	68	82	23	59
Keuka Gold (NY101)	41	45	45	14	73	58		49	76	57	51
MaineChip	19	19	47	2							13
Snowden	40	37	47	17		54		46			40
Superior	70	68	75	2	79	61	69	48	76	61	61
Yukon Gold	75	63	73	21	86	40	72	60	80	65	64
AF1437-1	59	68	59	22	77	67	57	63	67	52	59
AF1615-1	52	63	56	10		60	69	50	68	30	51
B0766-3	71	79	75	41	91	77	74	67	81	76	73
NY112	73	58	68	28	87	75	79	64	80	66	68
NY115	25	51	32	12	73	50	72	44	50	52	46

East Region Trial Table 4. Continued.

Clone	ME1 <sup>1</sup>	ME3 <sup>1</sup>	FL	NB	NJ	NY1 <sup>2</sup>	NY2 <sup>2</sup>	PEI	VA	Mean
<u>Red Clones</u>										
Chieftain	59	61	14	60			39			47
Dark Red Norland	58	66	6	54			45		36	44
NorDonna	23	52	10	38			28		14	28
<u>Russets/Long Whites</u>										
Russet Burbank	23	47					29	27		32
Russet Legend	56	53					66	47		56
Russet Norkotah	54	63		29		47	45		15	42
Russet Norkotah-3	66	76		60		39	60		1	50
Russet Norkotah-8	64	68		57		51	61		13	52
Shepody	59	70		51			57			59
Umatilla Russet	33	60		28		24		44	9	33
A8495-1	37	55		52			34	18	3	33
A81386-1	44	60		50			47		14	43
A84118-3	26	44		41				18		32
A84180-8	38	62		47				35		46
A86102-6	52	68						46		55
W1099Rus	45	46								46

<sup>1</sup>Trials were conducted in three locations in Maine, Presque Isle (ME1), Exeter (ME2), and St. Agatha (ME3).<sup>2</sup>The two locations in New York were Riverhead, Long Island (NY1), and Freeville (NY2).



East Region Trial Table 5. Average (sites x years) percent tuber defects and hollow heart, chip color, and bake and boil scores for 17 named and 13 numbered round-white clones. Number of comparisons (sites x years) are in parentheses.

Variety	Year(s)	----- % Tuber Defects -----					Hollow Heart	----- Chip Color <sup>2</sup> -----				Recon- ditioned <sup>4</sup>	Boil Score <sup>5</sup>	Bake Score <sup>5</sup>
		Total <sup>1</sup>	Sun- burn	Mis- shapen	Growth cracks	Out of Field <sup>3</sup>		50-55°F Storage	45°F Storage					
Round Whites														
Atlantic	1999	5.7(11)	2.9(10)	2.2(10)	0.7(10)	5.8(17)		210	720	001	010	201	200	
Atlantic	10	8.3(71)	3.6(68)	2.2(71)	1.4(74)	6.4(94)		23136	421318	11314	1169	1888	1961	
Eva (NY103)	1999	7.3(7)	5.5(6)	1.5(6)	0.5(6)	1.3(12)		300	500	000	000	200	001	
Eva (NY103)	4	12.8(23)	6.2(21)	2.8(21)	0.5(23)	1.4(40)		1010	1498	505	213	1232	621	
Itasca	1999	3.7(3)	1.6(3)	0.9(3)	0.8(3)	0.0(7)		100	300	000		000	100	
Itasca	3	6.9(12)	1.8(13)	2.2(12)	1.0(12)	1.7(22)		102	719	213	201	510	210	
Katahdin	1999	7.5(8)	6.4(7)	1.0(7)	0.3(7)	4.9(14)		100	131	001	001	210	110	
Katahdin	10	9.8(65)	5.5(62)	1.3(62)	0.6(64)	4.6(92)		7614	41228	0121	1114	17171	12123	
Kennebec	1999	16.9(7)	11.5(6)	5.0(6)	2.4(6)	3.5(13)		100	322	001	001	300	110	
Kennebec	10	16.7(52)	6.9(51)	4.3(51)	3.0(51)	3.4(77)		6415	151530	4118	4116	20114	9134	
Keuka Gold (NY101)	1999	1.9(6)	1.4(5)	0.5(5)	0.1(5)	2.5(10)		200	430	001	001	300	110	
MaineChip	1999	2.2(2)	1.4(2)	0.5(2)	0.0(2)	0.0(4)			200				000	
MaineChip	10	7.7(35)	3.6(35)	1.6(35)	1.4(35)	6.5(37)		911	3511	1112	823	461	352	
Snowden	1999	2.5(4)	1.6(4)	0.7(4)	0.2(4)	0.6(10)		200	400	000		100	000	
Snowden	8	4.6(34)	2.2(33)	1.5(33)	0.3(33)	1.8(50)		1831	2578	723	611	846	623	
Superior	1999	4.6(8)	2.3(7)	2.3(7)	0.4(7)	1.3(14)		210	241	010	010	210	110	
Superior	10	4.9(54)	1.2(51)	2.5(51)	0.9(53)	1.4(85)		16817	121424	1416	0410	18116	12113	
Yukon Gold	1999	5.8(7)	3.0(6)	1.7(6)	0.8(6)	5.1(10)		100	221	001	001	110	300	
Yukon Gold	10	8.1(30)	2.0(29)	2.3(29)	0.8(29)	5.9(48)		304	4419	016	004	1171	730	
AF1437-1	1999	8.9(7)	2.4(6)	2.3(6)	4.3(6)	0.3(10)		200	320	001	001	210	101	
AF1437-1	3	12.7(17)	1.6(16)	1.5(16)	3.8(17)	0.3(29)		401	582	005	003	1011	303	
AF1615-1	1999	6.5(7)	5.1(6)	1.2(6)	0.3(6)	2.0(10)		200	211	000	000	101	010	
AF1615-1	3	11.6(17)	5.0(16)	1.8(16)	0.4(17)	1.5(29)		320	336	102	002	723	311	
B0766-3	1999	6.4(7)	4.3(6)	1.3(6)	1.2(6)	2.0(10)		300	420	001	010	201	101	
B0766-3	3	8.9(17)	2.6(16)	2.5(16)	0.5(16)	3.6(29)		800	1571	413	320	1032	521	
NY112	1999	2.8(7)	2.4(6)	0.1(6)	0.1(6)	1.8(12)		300	520	001	010	300	200	
NY115	1999	3.6(7)	3.3(6)	0.4(6)	0.1(6)	0.4(12)		200	610	001	010	300	200	



East Region Trial Table 5. Continued.

Variety	Year(s)	Total <sup>1</sup>	% Tuber Defects			Hollow Heart	Chip Color <sup>2</sup>			Recon- ditioned <sup>4</sup>	Boil Score <sup>5</sup>	Bake Score <sup>5</sup>
			Sun- burn	Mis- shapen	Growth cracks		Out of Field <sup>3</sup>	50-55°F Storage	45°F Storage			
<u>Red Clones</u>												
Chieftain	1999	3.8(3)	1.3(3)	0.7(3)	1.2(3)	1.6(8)		0.01			1.00	
Chieftain	10	4.4(27)	1.1(26)	1.1(28)	1.2(27)	1.0(40)	1.02	0.215	0.03		10.21	4.20
NorDonna	1999	1.3(4)	0.8(3)	0.2(3)	0.1(3)	0.0(8)		0.01				
NorDonna	5	2.9(16)	1.3(15)	0.9(15)	0.1(15)	0.5(31)	0.01	1.013	0.05	0.02	2.20	0.31
Norland, Dk Red	1999	12.0(4)	1.4(3)	2.2(3)	4.9(3)	1.2(8)		0.10				
Norland, Dk Red	7	4.5(17)	0.5(16)	1.4(16)	1.0(16)	1.0(30)	2.14	1.76	0.02		2.21	2.21
<u>Russets/Long Whites</u>												
Russet Burbank	1999	20.9(4)	1.5(4)	17.4(4)	1.8(4)	3.8(6)		0.13	0.01	0.01	2.00	2.00
Russet Burbank	10	17.2(44)	1.3(44)	14.8(44)	1.2(44)	8.8(52)	0.10	1.419	0.013	0.012	17.44	10.110
Russet Legend	1999	11.1(4)	1.5(4)	2.8(4)	5.5(4)	2.9(7)		2.20	0.01	0.01	3.00	2.00
Russet Legend	2	11.2(7)	1.3(7)	3.6(7)	5.1(7)	2.5(13)		3.20	1.01	0.02	3.00	2.00
Russet Norkotah	1999	9.5(5)	1.7(5)	5.0(5)	0.4(5)	1.1(10)		0.05	0.01	0.01	1.00	0.01
Russet Norkotah	3	7.5(12)	1.5(12)	3.9(12)	0.4(12)	3.1(22)		0.114	0.06	0.04	6.10	2.11
Russet Norkotah-3	1999	16.5(5)	2.0(5)	9.8(5)	0.2(5)	6.0(10)		0.05	0.01	0.01	2.00	0.10
Russet Norkotah-3	2	16.0(9)	1.8(9)	7.5(9)	0.3(9)	7.2(17)		0.06	0.02	0.02	2.00	0.10
Russet Norkotah-8	1999	11.1(5)	2.0(5)	6.1(5)	0.4(5)	3.4(10)		0.14	0.01	0.01	2.00	0.01
Russet Norkotah-8	2	13.7(9)	2.0(9)	5.8(9)	0.3(9)	3.3(17)		0.15	0.02	0.02	2.00	0.01
Shepody	1999	20.8(3)	7.3(3)	11.5(3)	0.0(3)	4.5(5)		1.01			1.00	
Shepody	2	33.2(6)	7.4(6)	10.5(6)	0.1(6)	3.8(8)		1.03	0.02	0.02	1.00	
Umatilla Russet	1999	20.4(4)	1.6(4)	14.0(4)	2.2(4)	1.6(8)		0.31	0.01	0.01	3.00	1.10
Umatilla Russet	2	19.1(7)	2.0(7)	13.7(7)	1.6(7)	3.8(12)		0.32	0.02	0.02	3.00	1.10
A8495-1	1999	7.6(4)	2.8(4)	3.6(4)	0.1(4)	1.6(8)		2.11	0.01	0.01	3.00	2.00
A81386-1	1999	11.2(3)	3.8(3)	6.0(3)	0.0(3)	0.4(7)		1.21	0.01	0.10	0.10	0.10
A81386-1	2	17.8(6)	5.7(6)	6.3(6)	0.1(6)	0.4(12)		2.21	0.11	0.11	0.10	0.10
A84118-3	1999	7.4(3)	1.4(3)	4.3(3)	0.3(3)	0.0(7)		1.21	0.01	0.01	2.10	2.00
A84118-3	2	7.9(7)	2.3(7)	4.5(7)	0.2(7)	3.2(14)		1.22	0.02	0.02	2.10	2.00
A84180-8	1999	11.1(3)	0.4(3)	4.7(3)	4.2(3)	2.5(7)		0.04	0.01	0.01	3.00	1.10
A84180-8	2	8.6(7)	0.8(7)	4.2(7)	2.7(7)	3.2(14)		0.05	0.02	0.02	3.00	1.10

East Region Trial Table 5. Continued.

Variety	Year(s)	% Tuber Defects					Chip Color <sup>2</sup>				Boil Score <sup>5</sup>	Bake Score <sup>5</sup>
		Total <sup>1</sup>	Sun-burn	Mis-shapen	Growth cracks	Hollow Heart	Out of Field <sup>3</sup>	50-55°F Storage	45°F Storage	Recon-ditioned <sup>4</sup>		
A86102-6	1999	19.4(3)	1.5(3)	11.1(3)	2.3(3)	8.1(4)		0.11			2.00	1.00
A86102-6	2	14.9(7)	1.8(7)	8.7(7)	1.8(7)	8.8(10)		0.12	0.01	0.01	2.00	1.00
W1099Rus	1999	12.0(2)	1.0(2)	7.2(2)	2.2(2)	2.0(5)		0.11			1.00	
W1099Rus	4	13.4(11)	1.1(11)	5.4(11)	1.3(11)	3.5(21)		1.19	0.07	0.03	5.02	1.40

<sup>1</sup>Total defects may contain defects (common scab, rot, etc.) other than the four listed in this table.

<sup>2</sup>From left-to right, the scores are good, borderline, and poor.

<sup>3</sup>Out of field samples were fried three to twelve days after harvest in New Jersey, North Carolina and Virginia.

<sup>4</sup>Chips were reconditioned in trials in Maine, Upstate New York, and New Brunswick.

<sup>5</sup>From left-to-right, the scores are good, fair, and poor.

**East Region Trial Table 6.** Tuber and plant rating system for NE-184 potato variety trials.

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**TUBER RATING SYSTEM**

**Tuber Skin Color**

1. Purple
2. Red
3. Pink
4. Dark Brown
5. Brown
6. Tan
7. Buff
8. White
9. Cream

**Skin Texture**

1. Part. russet
2. Heavy russet
3. Mod. russet
4. Light russet
5. Netted
6. Slight netting
7. Moderately smooth
8. Smooth
9. Very smooth

**Tuber Shape**

1. Round
2. Mostly round
3. Round to oblong
4. Mostly oblong
5. Oblong
6. Oblong to long
7. Mostly long
8. Long
9. Cylindrical

**Eye Depth**

1. Very deep
2. --
3. Deep
4. --
5. Intermediate
6. --
7. Shallow
8. --
9. Very shallow

**Appearance**

1. Very poor
2. --
3. Poor
4. --
5. Fair
6. --
7. Good
8. --
9. Excellent

**PLANT RATING SYSTEM**

**Plant Type**

1. Decumbent-poor canopy
2. Decumbent-fair canopy
3. Decumbent-good canopy
4. Spreading-poor canopy
5. Spreading-fair canopy
6. Spreading-good canopy
7. Upright-poor canopy
8. Upright-fair canopy
9. Upright-good canopy

**Air Pollution**

1. Dead
2. --
3. Moderate defoliation
4. --
5. Moderate injury
6. --
7. Mild injury
8. --
9. No symptoms

**Plant size**

1. Very small
2. +
3. Small
4. +
5. Medium
6. +
7. Large
8. +
9. Very large

**Vine Maturity**

1. Very early
2. Early
3. +
4. Medium early
5. Medium
6. Medium late
7. +
8. Late
9. Very late

**Plant Appearance**

1. Very poor
  2. Poor
  3. +
  4. --
  5. Fair
  6. +
  7. --
  8. Good
  9. Excellent
-

## SOUTHWESTERN REGIONAL POTATO VARIETY TRIAL

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This was the second year for the Southwestern Regional Trials. As in 1998 it consisted of russet, chipping, and specialty trials. The Southwest Regional Potato Research Group includes California, Colorado, and Texas. The objective is to evaluate promising advanced selections primarily from the Texas and Colorado breeding programs. Entries that are successful in this trial will then be entered in the various Western Regional Trials.

The 1999 trial consisted of 16 entries, including the check varieties Chipeta, Yukon Gold, and Russet Norkotah. The top yielding chipping entries were NDTX4930-5W and Chipeta. Based on its outstanding performance, NDTX4930-5W will be advanced to the Western Regional Chipping Trial. The two highest yielding yellow flesh selections were TX1674-1W/Y and BTX1544-2W/Y. The yellow flesh russet TX1523-1Ru/Y, will be graduated to the Western Regional Red/Specialty trial. The three highest yielding russet entries were ATX9204-4Ru, ATX9202-3Ru, and Russet Norkotah. AC89536-5 and ATX9202-3Ru will be graduated to the Western Regional Russet Trial.

Trial locations, cooperators and cultural information are shown in Southwestern Table 1. Southwestern Table 2 is a list of the descriptions of the clones and varieties. Total yield, total yield of U.S. No. 1s, specific gravity, chipping and fry color data, and a summary of all locations are found in Southwestern Tables 3-5

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**Southwestern Table 1. Locations, Cooperators, and Cultural Information**

Locations	Cooperators	Irrigation	Fertilization (lb/A)	Harvest method	Dates		
					Plant	Vine kill	Harvest
1. Kern Co.	R. Voss						
California (KRN)	H. Phillips	Sprinkler	400-110-0	Machine	23-Feb	10-Jun	28-Jun
2. Tulelake	R. Voss, H. Phillips	Sprinkler	160-200-0	Machine	18-May	17-Sep	21-Sep
California (TUL)	D. Kirby						
3. San Luis Valley	D. Holm, F.G. Popiel	Pivot	170-100	Machine	19-May	01-Aug	23-Sep
Colorado (SLV)	S. Thompson						
4. Springlake	C. Miller, J. Koym	Pivot	177-30-30	Hand	12-Mar	03-Aug	17-Aug
Texas (SPR)	D. Scheuring						

Southwestern Table 2. Description of Clones and Varieties

Clone / Variety	Parents		Flower Color	Vine Size	Maturity	Tuber Shape	Skin Color	Entered By	Use
	Female	Male							
1. Chipeta	WNC612-13	Wischip	Red-Purple	Large	Med-Late	Round	Buff	Check	Chip
2. NDTX4930-5W	ND860-2	A7961-1	White	Medium	Medium	Oblong	White	TX	Chip
3. TX1673-2W	A8603-13	A8495-1	White	Medium	Medium	Oblong	White	TX	Chip
4. Yukon Gold	Norgleam	W5279-4	White	Medium	Early	Oval	White	Check	Specialty
5. BTX1544-2W/Y	BO811-13	Yukon Gold	White	Medium	Medium	Oblong	White	TX	Specialty
6. BTX1750-W/Y	K7-6	BO800-12	White	Medium	Medium	Oblong	White	TX	Specialty
7. TX1523Ru/Y	Krantz	Delta Gold	White	Medium	Medium	Oblong	Russet	TX	Specialty
8. TX1574-1W/Y	Russet Nugget	Delta Gold	White	Medium	Medium	Oblong	White	TX	Specialty
9. Russet Norkotah	ND9687-5Ru	ND9526-4Ru	White	Small	Early	Long	Russet	Check	Fresh
10. AC89536-5RU	Butte	A8469-5	White	Medium	Medium	Oblong	Russet	CO	Fresh
11. AC90017-2RU	A8495-13	A8341-5	White	Medium	Medium	Oblong	Russet	CO	Fresh
12. ATX9202-1Ru	A8343-12	A8495-1	White	Medium	Medium	Oblong	Russet	TX	Fresh
13. ATX9202-3Ru	A8343-12	A8495-1	White	Medium	Medium	Oblong	Russet	TX	Fresh
14. ATX9204-4Ru	A8343-12	A8519-4	White	Medium	Medium	Oblong	Russet	TX	Fresh
15. ATX92230-1Ru	A8603-13	A8495-1	White	Medium	Medium	Oblong	Russet	TX	Fresh
16. ATX9312-1Ru	A8495-1	A8872-6	White	Medium	Medium	Oblong	Russet	TX	Fresh

Southwestern Table 3. Total Yield, Merit Score<sup>1</sup>, and Rank<sup>2</sup> within type (Chipping, Yellow Flesh, Russets) of Clones in the Southwest Regional Trial, 1999.

Clone	CA			CO			TX			Mean							
	KRN	TUL		SLV	SPR	Cwt/A	Score	Rank	Cwt/A		Score	Rank					
	Cwt/A	Score	Rank	Cwt/A	Score	Rank	Cwt/A	Score	Rank	Cwt/A	Score	Rank	Merit	Cwt/A	Score	Rank	Merit
1. Chipeta	648		2	577	3.2	1	509	1.0	1	211	3.0	3		486	2.4	1	
2. NDTX4930-5W	674	3.3	1	425	3.3	2	426	3.0	3	391	3.2	1		479	3.2	2	
3. TX1673-2W	635	3.8	3	405	4.0	3	463	1.0	2	315	2.6	2		454	2.5	3	
4. Yukon Gold	639	2.7	1	277	4.0	3	374	4.0	4	262	2.7	3		388	3.4	3	
5. BTX1544-2W/Y	584	2.5	2	375	2.0	1	469	4.0	1	284	2.7	2		428	2.9	1	
6. BTX1750-W/Y	419	3.3	5	213	3.7	3	356	2.0	5	158	2.3	6		287	2.8	5	
7. TX1523Ru/Y	479	2.5	4				414	5.0	3	215	3.0	5		369	3.7	4	
8. TX1574-1W/Y	553	3.0	3	444	3.3	1	446	3.0	2	261	2.4	4		426	2.9	2	
9. Russet Norkotah	774	3.5	1	648	3.0	1	404	1.0	5	219	3.0	8		511	2.6	2	
10. AC89536-5Ru	636	3.0	4	476	2.5	3	367	1.0	7	237	3.0	7		429	2.4	5	
11. AC90017-2Ru	652	4.0	3	367	4.0	6	472	3.0	3	279	3.0	4		443	3.5	4	
12. ATX9202-1Ru	499	3.0	8	435	2.3	5	391	1.0	6	300	3.3	3		406	2.4	7	
13. ATX9202-3Ru	624	2.5	6	468	3.1	4	495	3.0	1	311	3.3	2		475	3.0	3	
14. ATX9204-4Ru	723	2.0	2	557	1.8	2	488	1.0	2	384	3.9	1		538	2.2	1	
15. ATX92230-1Ru	625	3.0	5	344	2.0	7	427	2.0	4	274	3.2	5		418	2.6	6	
16. ATX9312-1Ru	570	2.8	7	300	2.8	8	349	1.0	8	244	3.4	6		366	2.5	8	
Mean	608	3.1		421	2.9		428	2.3		272	3.0			432	2.8		

1 1= very poor, 5=excellent

2 Rank within type

1 1= very poor, 5=excellent

2 Rank within type



Southwestern Table 4. Total Yield and Percent of U.S. No. 1 (&gt;4oz) in the Southwest Regional Trial, 1999.

Clone	CA				CO				TX				Mean		
	KRN		TUL		SLV		SPR		SPR		SPR				
	CWT/A	%	Rank <sup>1</sup>	CWT/A	%	Rank	CWT/A	%	Rank	CWT/A	%	Rank			
1. Chipeta	594	92	3	408	71	1	368	72	1	113	54	3	371	72	3
2. NDTX4930-5W	649	96	1	365	86	2	301	71	3	254	65	1	392	79	1
3. TX1673-2W	626	99	2	338	83	3	333	72	2	140	44	2	359	74	2
4. Yukon Gold	601	94	1	228	82	2	310	83	4	164	63	2	326	80	3
5. BTX1544-2W/Y	561	96	2	311	83	1	398	85	1	186	65	1	364	82	1
6. BTX1750-W/Y	377	90	5	151	71	3	209	59	5	48	30	5	196	62	5
7. TX1523Ru/Y	466	97	4				343	83	3	118	55	4	309	78	4
8. TX1574-1W/Y	527	95	3	371	84	1	344	77	2	132	51	3	344	77	2
9. Russet Norkotah	720	93	1	252	39	4	335	83	4	138	63	7	361	69	3
10. AC89536-5Ru	594	93	4	316	66	1	255	69	7	134	57	8	325	71	5-6
11. AC90017-2Ru	607	93	3	291	79	3	346	73	3	160	57	6	351	76	4
12. ATX9202-1Ru	462	93	8	220	51	5	289	74	6	200	67	3	293	71	7
13. ATX9202-3Ru	569	91	6	306	65	2	366	74	2	212	68	2	363	75	2
14. ATX9204-4Ru	684	95	2	177	32	7	389	80	1	297	77	1	387	71	1
15. ATX92230-1Ru	596	95	5	183	53	6	327	77	5	192	70	4	325	74	5-6
16. ATX9312-1Ru	463	81	7	134	45	8	207	59	8	179	73	5	246	65	8
Mean	569	90		270	62		320	72		167	59		332	71	

<sup>1</sup> Rank within type



**Southwestern Table 5.** Specific Gravity (1.0XX) of Clones in Southwest Regional Trial, 1999.

Clone	CA		CO		Mean
	KRN	TUL	SLV		
1. Chipeta	75	84	92		84
2. NDTX4930-5W	78	70	96		81
3. TX1673-2W	75	66	89		76
4. Yukon Gold	87	70	87		81
5. BTX1544-2W/Y	74	73	90		79
6. BTX1750-W/Y	85	77	75		79
7. TX1523Ru/Y	72		84		78
8. TX1574-1W/Y	85	75	96		85
9. Russet Norkotah	75	72	79		75
10. AC89536-5Ru	81	83	89		84
11. AC90017-2Ru	71	77	84		77
12. ATX9202-1Ru	87	69	95		84
13. ATX9202-3Ru	82	77	90		83
14. ATX9204-4Ru	76	70	81		76
15. ATX92230-1Ru	79	73	95		82
16. ATX9312-1Ru	85	75	93		84
Mean	79	74	88		81

Southwestern Table 6. Chipping and Fry Data of Clones in the Southwestern Regional Trial, 1999.

Clone	Hunter L * Value <sup>1</sup>		Chip Color <sup>2</sup>				Fry Data <sup>6</sup>	
	TX		TX	CO <sup>3</sup>	CO <sup>4</sup>	CO <sup>5</sup>	CO <sup>7</sup>	CO <sup>8</sup>
	SPR		SPR	SLV	SLV	SLV	SLV	SLV
1. Chipeta	57.5		4	4.5	4	4		
2. NDTX4930-5W	60.7		2	2.5	3	2		
3. TX1673-2W	53.7		4	5	5	3.5		
4. Yukon Gold							2	2
5. BTX1544-2W/Y							1	1
6. BTX1750-W/Y				3	4	2		
7. TX1523Ru/Y							1	2
8. TX1574-1W/Y							2	2
9. Russet Norkotah							3	3
10. AC89536-5Ru							4	4
11. AC90017-2Ru							1	3
12. ATX9202-1Ru							2	3
13. ATX9202-3Ru							2	2
14. ATX9204-4Ru							3	4
15. ATX92230-1Ru							2	3
16. ATX9312-1Ru							4	4

1 The greater the L\* value the whiter the chip

5 5 weeks at 50° F

2 1=light, 5=dark

6 0=light, 4=dark

3 5 weeks at 40° F + 3 weeks at 60° F

7 at harvest

4 5 weeks at 40° F

8 at 45° F

Southwestern Table 7. Summary of Clones in the Southwest Regional Trial, 1999.

Clone	Plant Characteristics					Yield				Tuber Characteristics					
	Stand	Stems/ hill	Vine1 Size	Vine2 Mat.	Total Yield	#1s	%	%	%	Culls	Specific gravity	Tuber shape	Tuber weight	Skin color	Merit3 Score
1. Chipeta	94	3.1	4.0	3.3	486	72	24	19	10	1.084	Round	3.2	Buff	2.4	
2. NDTX4930-5W	95	2.5	3.1	2.8	479	79	25	17	5	1.081	Oblong	4.8	White	3.2	
3. TX1673-2W	94	3.2	3.5	3.3	454	74	10	22	5	1.085	Oblong	3.3	White	2.9	
4. Yukon Gold	94	2.1	3.2	2.5	388	82	28	19	5	1.081	Oval	4.2	White	3.4	
5. BTX1544-2W/Y	94	2.2	3.5	2.6	428	83	19	16	7	1.079	Oblong	4.1	White	2.9	
6. BTX1750-W/Y	93	4.6	2.0	2.8	287	65	13	40	2	1.079	Oblong	2.7	White	2.8	
7. TX1523Ru/Y	93	3.1	3.0	2.6	369	79	13	23	1	1.078	Oblong	4.0	Russet	3.7	
8. TX1574-1W/Y	94	3.2	3.4	3.2	471	72	23	34	1	1.082	Oblong	3.1	White	2.5	
9. Russet Norkotah	97	3.0	3.3	2.5	511	69	30	14	6	1.075	Long	3.5	Russet	2.6	
10. AC89536-5Ru	94	2.6	3.6	3.3	429	71	9	19	11	1.084	Oblong	3.2	Russet	2.4	
11. AC90017-2Ru	95	2.9	3.4	3.2	443	76	19	17	7	1.077	Oblong	3.7	Russet	3.5	
12. ATX9202-1Ru	94	1.9	3.7	3.2	406	71	20	16	14	1.084	Oblong	4.3	Russet	2.4	
13. ATX9202-3Ru	96	1.8	3.9	3.3	475	75	22	12	12	1.083	Oblong	4.6	Russet	3.0	
14. ATX9204-4Ru	97	1.7	3.7	3.3	538	71	26	10	19	1.076	Oblong	5.4	Russet	2.2	
15. ATX92230-1Ru	95	2.5	3.7	3.3	418	74	24	12	13	1.082	Oblong	4.2	Russet	2.6	
16. ATX9312-1Ru	96	2.3	3.4	3.0	366	65	27	15	18	1.084	Oblong	5.7	Russet	2.5	
Mean	95	3	3	3	434	74	22	19	9	1.081		4.0		2.8	

<sup>1</sup>1=very small, 2=small, 3=medium, 4=large, 5=very large

<sup>2</sup>1=very early, 2=early, 3=medium, 4=late, 5=very late

<sup>3</sup>1=very poor, 5=excellent

## Western Regional Potato Trials

R. G. Novy and D.L. Corsini  
USDA-ARS, P.O. Box AA  
Aberdeen, ID 83210  
and Cooperators:

**California:** R. Voss, H. Phillips, H. Carlson, D. Kirby, and J. Nunez; **Colorado:** D. Holm; **Idaho:** S. Love; **New Mexico:** R.D. Baker, W. Laing, and C. Owen; **Oregon:** A. Mosley, D. Hane, K. Rykbost, B. Charlton, C. Shock, E. Eldredge, and S. James; **Texas:** J.C. Miller, Jr., J. Koym, and D. Schuering; **Washington:** R. Thornton, N. Fuller, J. Rupp, G. Newberry, and C. Brown.

The 1999 Western Regional Potato Variety Trial consisted of 15 trials conducted in seven states. **Table 1** lists the trial locations, respective cooperators, and pertinent cultural information at each site. Fourteen experimental selections and four check cultivars were entries in 1999. Entries' parentage, their submitting organizations, and descriptions of their tuber and vine characteristics are given in **Table 2**.

**Total and U.S. No. 1 Yield (Tables 3 & 4):** In the early harvest trials, TXNS296 had the highest total yield (463 cwt/A) and U.S. No. 1 yield (322 cwt/A). A8893-1 and AO87277-6 at 443 and 438 cwt/A respectively, rounded out the top three entries for total yield. AO87277-6 also had the second-highest U.S. No. 1 yield at 317 cwt/A, followed closely by PORTGS124-1 and A8893-1 at 316 cwt/A.

In the late harvest trials, the top three entries for total yield were A88338-1 (603 cwt/A), AC87138-4 (598 cwt/A), and Ranger Russet (595 cwt/A). A88338-1 retained its number 1 spot for U.S. No. 1 yield at 500 cwt/A. AO87277-6 and Ranger were second and third for U.S. No. 1's at 484 and 464 cwt/A.

**Tuber Size Distribution (Tables 5 & 6):** At the early harvest trial sites, PORTGS124-1 had the greatest yield of >(10-12) ounce tubers at 143 cwt/A. This transgenic clone of Shepody significantly outyielded non-transformed Shepody by 58 cwt/A. A88338-1 (101 cwt/A) and Shepody (85 cwt/A) were ranked number 2 and 3 for yield of tubers >(10-12) ounces.

A88338-1 significantly out-yielded all other entries in the late harvest trials with 256 cwt/A of tubers >(10-12) ounces. Ranger Russet and A8893-1 were second and third with yields of 149 and 142 cwt/A.

Entries with a large proportion of under-size tubers (<4 ounces) across both the early and late trials were AC87138-4, TXNS102, COA89036-10, and Russet Burbank.

**Specific Gravities (Table 7):** Across the early and late harvest trials, AO87277-6, AC87079-3, and Ranger Russet had consistently high gravities. AC87084-3 was not among the top five in the early trial, but had the second-highest gravity (1.088) in the late harvest trials.

### **Tuber Size and Shape (Table 8):**

PORTGS124-1 (8.2 ounces) and A88338-1 (7.4 ounces) had the largest tuber size averaged across the early harvest sites. A88338-1 had the largest tuber size in the late harvest trials at 10.4 ounces, followed by Ranger Russet at 8.1 ounces.

Entries with consistently long tubers across early and late harvest trials were Ranger Russet, Russet Burbank, TXNS296, TXNS102, and Russet Norkotah. AC87138-4 had better length in the late harvest trials (4.1), than it did in the early harvest trials (3.6).

### **Summary of External and Internal Defects**

**(Tables 9 & 10):** A mean summary of external and internal defects was compiled for each entry, along with specific problem sites where extreme values were observed. Excessive overall external defect means were not observed.

The incidence of hollow heart was high (20-22%) in tubers of AC87079-3, AC87084-3, and AC87138-4. A high percentage (10-22%) of net necrosis/vascular discoloration was observed in tubers of Shepody and its transgenic derivatives PORTGS 124-1 and 129-1. AC87084-3 and AC87138-4 appear to have a blackspot susceptibility similar to that of Ranger Russet.

### **French Fry Color and Quality (Table 11):**

A8893-1, A9014-2, AC87138-4, and AO87277-6 were exceptional for fry color from the field, as well as following storage at 45°F. Processing

entries with >20% sugar ends were NDD840-1, CO89036-10, and AC87138-4.

#### **Disease Evaluation and Metribuzin Reaction**

**(Table 12):** Trials for evaluating disease resistance of entries were conducted in Aberdeen, ID, and Hermiston and Corvallis, OR. A88338-1 appeared to have resistance to verticillium wilt/early dying in field evaluations conducted at both Aberdeen, ID and Hermiston, OR. A88338-1 also appeared to have resistance to early blight as well. Greater than 35 % of the tubers of Ranger Russet, Shepody, A88338-1, and NDD840-1 were observed to have severe net necrosis. Twenty percent of the tubers of Ranger Russet and A88338-1 had severe early blight; 34% of the tubers of AC87138-4 also displayed severe tuber early blight. A9014-2, A88338-1, and A087277-6 had a lower incidence of Erwinia soft rot than did other evaluated entries. A9014-2 and AC87084-3 were identified as having some susceptibility to Metribuzin.

#### **Chemical Analyses of Tubers (Table 13):**

Data is presented on tuber solids, sugars, proteins, vitamin C, and glycoalkaloids.

**Merit Scores (Table 14):** Entries were evaluated for their processing and fresh market merit. A9014-2, A087277-6, and Ranger Russet were rated as the top three entries for processing merit. TXNS102 and TXNS296 were recognized as having high merit for the fresh market.

#### **Summary of Entries' Performances in 1999**

##### **(Table 15):**

Yields, tuber size and shape, specific gravity, fry color from 45° F, merit scores, noted problems, and disposition are summarized for each entry.

#### **Three Year Summary of Graduating Entries**

**(Table 16):** Three entries, AC87084-3, A087277-6, and NDD840-1, completed the maximum three years of testing in the Western Regional Potato Variety Trial. A summary of their performance relative to Russet Burbank in each of the three years is given, as well as a 3-year average.

No.	Locations	Cooperators	Trial	Irrigatio	Fertilizer	Planting	Harvest	Days to	Days to
						Date	Date	Vine Kill	Harvest
1	Kern Co. California (KRN)	R. Voss, H. Phillips J. Nunez	Early	Sprink.	N-P-K-S(lb/A) 400-110	23-Feb	28-Jun	-	125
2	Tulelake California (TUL)	R. Voss, H. Phillips D. Kirby, H. Carlson	Late	Sprink.	160-200	18-May	5-Oct	129 Diquat	140
3	San Luis Valley Colorado (SLV)	D. Holm	Late	Pivot	130-100	19-May	23-Sep	105 Sulf Acid	127
4	Aberdeen Idaho (AB)	S. Love, R. Novy, D. Corsini	Late	Sprink.	240-150-80-44	5-May	23-Sep	126 Diquat	141
5	Kimberly Idaho (KIM)	S. Love, R. Novy, D. Corsini	Late	Sprink.	220-130	26-Apr	12-Oct	137 Diquat	169
6	Clovis New Mexico (CLV)	R. D. Baker, W. Laing	Early	Furrow	84-120-72-0+	30-Mar	1-Sep	136 Mech.	155
7	Farmington New Mexico (FRM)	C. Owen	Late	Sprink.	182-104-120	20-Apr	18-Oct		181
8	Hermiston Oregon (HRM)	D. Hane, A. Mosley	Early Late	Pivot Pivot	290-80-200-40	31-Mar 12-Apr	16-Aug 30-Sep	120 155	138 171
9	Klamath Falls Oregon (KLM)	K. Rykboost, B. Charlton	Late	Sprink.	160-80-80-140	19-May	1-Oct	110 Diquat	135
10	Malheur Oregon (MAL)	C. Shock, A. Mosley, E. Eldredge	Early Late	Furrow Late	91 91	19-Apr 21-Apr	11-Aug 27-Sep	113 149 Mech.	114 159
11	Springlake Texas (SPR)	J. C. Miller, Jr. J. Koym, D. Schuering	Early	Pivot	177-30-30	12-Mar	17-Aug	144	158
12	Othello Washington (OTH)	R. Thornton, N. Fulle J. Rupp, G. Newberr	Early Late	Sprink. Pivot	262-455-245 321-486-400	6-Apr 19-Apr	24-Aug 27-Sep	121 151 Mech. Diquat	140 161



WESTERN REGIONAL TABLE 2: 1999 Western Regional Potato Variety Trial - CLONE, PARENTAGE, FLOWER COLOR, ENTRY SUBMISSION, USE, TRIAL, YEARS IN TRIAL, SEED SOURCE, STAND, TUBER AND VINE CHARACTERISTICS

Tuber and Vine Descriptions <sup>2</sup>																
No. Clone	Parents	Flower Color <sup>1</sup>	Entered by	Use	Trial	Year in Trial	Seed Source	Stand <sup>2</sup>	Tuber Shape (1-5) <sup>3</sup>	Tuber Skin (1-5) <sup>4</sup>	Vine Size (1-5) <sup>5</sup>	Vine Maturity (1-5) <sup>6</sup>				
1	RUSSET BURBANK	W	Ck	Dual	E/L	-	OR	98	Long	4.5	Med Russet	3.6	Med-large	3.5	Medium	3.4
2	RANGER RUSSET	RP	Ck	Dual	E/L	-	OR	99	Long	4.6	Med Russet	3.5	Med-large	3.8	Med-late	3.6
3	RUSSET NORKOTAH	W	Ck	Fresh	E/L	-	OR	96	Long	4.1	Med Russet	4.0	Medium	2.6	Early	2.2
4	SHEPODY	RP	Ck	Proc	E	-	OR	97	Obl-Lng	4.0	White	1.1	Med-large	3.5	Medium	3.3
5	A88338-1	RP	ID	Dual	E/L	2	OR	96	Obl-Lng	3.6	Med Russet	3.6	Med-large	4.0	Late	4.2
6	A8893-1	W	ID	Dual	E/L	1	OR	97	Oblong	3.4	Med Russet	3.7	Med-large	3.4	Med-early	3.0
7	A9014-2	W	ID	Dual	E/L	1	OR	96	Obl-Lng	3.7	Med-Hvy Rus	4.3	Medium	2.9	Medium	3.4
8	AC87079-3	W	CO	Fresh	E/L	1	CO	97	Oblong	3.5	Med-Hvy Rus	4.3	Med-large	4.0	Medium	3.2
9	AC87084-3	P	CO	Dual	E/L	3	OR/CO	95	Rnd-Obl	2.9	Med-Hvy Rus	4.4	Med-large	3.8	Medium	3.4
10	AC87138-4	W	CO	Dual	E/L	1	CO	97	Obl-Lng	3.9	Med Russet	3.7	Med-large	3.9	Medium	3.5
11	AO87277-6	RP	OR	Dual	E/L	3	OR	97	Obl-Lng	3.8	Med Russet	3.4	Med-large	3.3	Medium	3.5
12	CO89036-10	W	CO	Dual	E/L	1	CO	97	Oblong	3.2	Light Russet	2.9	Large	4.2	Medium	3.4
13	NDD840-1	PINK	CA	Dual	L	3	OR	73*	Oblong	3.4	Med-Hvy Rus	4.1	Med-large	3.1	Med-late	3.9
14	PORTGNP3-138	W	OR	Fresh	E	1	OR	98	Obl-Lng	3.8	Med Russet	4.0	Small	1.8	Early	2.5
15	PORTGS124-1	RP	OR	Proc	E	1	OR	96	Obl-Lng	3.7	White	1.6	Med-large	3.7	Medium	3.4
16	PORTGS129-1	RP	OR	Proc	E	1	OR	99	Obl-Lng	3.6	White	1.5	Medium	3.0	Medium	3.3
17	TXNS102	W	TX	Fresh	E/L	1	TX	98	Long	4.2	Med Russet	3.9	Medium	2.8	Med-early	2.8
18	TXNS296	W	TX	Fresh	E/L	1	TX	99	Long	4.3	Med Russet	3.9	Med-large	3.1	Med-early	2.7

<sup>1</sup> P = Purple, R = Red, W = White.

<sup>2</sup> Numerical values are means of all trial locations.

<sup>3</sup> 1.0-2.0 = Round, 2.1-2.5 = Round-Oblong, 2.6-3.5 = Oblong, 3.6-4.0 = Oblong-Long, 4.1-5.0 = Long

<sup>4</sup> 1.0-2.0 = White, 2.1-3.0 = Light Russet, 3.1-4.0 = Medium Russet, 4.1-4.5 = Medium Heavy Russet, 4.6-5.0 Heavy Russet

<sup>5</sup> 1.0-2.5 = Small, 2.6-3.0 = Medium, 3.1-4.0 = Medium-Large, 4.1-4.5 = Large, 4.6-5.0 = Very Large

<sup>6</sup> 1.0-2.5 = Early, 2.6-3.0 = Medium-Early, 3.1-3.5 = Medium, 3.6-4.0 = Medium-Late, 4.1-4.5 = Late, 4.6-5.0 = Very Late

\* 28% in Kern County, California.

WESTERN REGIONAL TABLE 3: 1999 Western Regional Potato Variety Trial - TOTAL YIELD (CWT/A) - EARLY AND LATE HARVEST

No. Clone	Total Yield - Early Harvest (CWT/A)											Total Yield - Late Harvest (CWT/A)										
	CA	NM	OR	TX	WA						Entry	CA	CO	ID	NM	OR	WA	OTH				Entry
	KRN <sup>1</sup>	CLV	HRM	MAL	SPR	OTH	Mean/Rank						TUL	SLV <sup>1</sup>	AB	KIM	FRM	HRM	KLM	MAL	OTH	Mean/Rank
1 R. BURBANK	687	223	435	531	245	553	337 13 abc					528	471	429	469	434	783	559	545	805	569	6 a
2 RANGER R.	683	301	414	489	367	547	424 8 abc					522	410	516	490	575	765	556	522	817	595	3 a
3 R. NORKOTAH	774	206	437	502	260	667	415 9 abc					375	367	304	284	335	523	533	464	705	440	12 cd
4 SHEPODY	528	265	478	491	188	588	402 12 abc					-	406	-	-	-	-	-	-	-	-	-
5 A88338-1	620	250	369	492	204	593	381 15 abc					594	370	530	484	578	821	489	565	759	603	1 a
6 A8893-1	608	264	494	548	309	603	443 2 ab					432	-	499	542	520	668	522	603	787	572	5 a
7 A9014-2	-	247	398	486	311	539	396 14 abc					383	-	497	419	392	590	438	508	692	490	11 bc
8 AC87079-3	768	221	486	523	276	566	414 10 abc					353	351	415	409	491	785	466	565	784	534	10 ab
9 AC87084-3	860	256	346	422	200	506	346 17 c					408	440	325	414	148	626	527	605	443	437	13 cd
10 AC87138-4	590	252	507	571	212	587	426 6 ab					550	437	507	505	410	832	548	600	829	598	2 a
11 AO87277-6	591	325	410	534	260	660	438 3 ab					546	-	490	512	392	819	572	581	810	590	4 a
12 CO89036-10	776	258	345	543	299	420	373 16 abc					447	391	524	466	512	761	518	605	706	567	7 a
13 NDD840-1	201	-	-	-	-	-	-					323	388	366	339	398	514	286	-	648	411	14 d
14 PORTGNP3-138	-	149	501	537	266	606	412 11 abc					-	-	-	-	-	-	-	-	-	-	-
15 PORTGS124-1	-	231	534	505	208	642	424 7 ab					-	-	-	-	-	-	-	-	-	-	-
16 PORTGS129-1	-	247	563	514	210	642	435 4 ab					-	-	-	-	-	-	-	-	-	-	-
17 TXNS102	-	151	544	555	276	628	431 5 ab					591	404	359	362	451	680	533	585	804	546	9 ab
18 TXNS296	-	248	575	573	272	647	463 1 a					544	436	392	391	401	679	597	612	805	553	8 ab
Location Means	641	241	461	519	257	588	413					471	406	440	435	431	703	510	566	742	536	

Numbers followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

<sup>1</sup>Excluded from means due to missing entries.



WESTERN REGIONAL TABLE 4: 1999 Western Regional Potato Variety Trial - YIELD OF U.S. #1'S (CWT/A & %) - EARLY AND LATE HARVEST

U.S. No. 1's - Early Harvest

(CWT/A)

No. Clone	CA	NM	OR	TX	WA	Entry
	KRN <sup>1</sup>	CLV	HRM	MAL	SPR	OTH
1 R. BURBANK	371	44	237	359	41	250
	54	19	55	67	17	52
2 RANGER R.	552	89	302	393	284	428
	81	29	73	81	77	78
3 R. NORKOTAH	720	65	355	393	165	540
	93	32	81	78	63	81
4 SHEPODY	420	84	305	404	89	393
	80	31	64	82	47	67
5 A88338-1	577	83	341	398	132	448
	93	33	92	81	65	76
6 A8893-1	537	87	410	455	177	451
	88	33	83	83	57	75
7 A9014-2	-	109	324	426	227	442
	-	44	82	87	74	82
8 AC87079-3	686	74	353	454	150	403
	89	33	73	87	54	71
9 AC87084-3	806	85	286	362	80	406
	94	33	83	86	40	80
10 AC87138-4	520	46	358	426	70	417
	88	19	71	75	35	71
11 A087277-6	557	119	286	466	188	523
	94	36	70	87	72	79
12 C089036-10	724	63	222	430	138	294
	93	25	64	79	47	70
13 NDD840-1	155	-	-	-	-	-
	77	-	-	-	-	-
14 PORTGNP3-138	-	20	412	373	152	465
	-	23	82	69	57	77
15 PORTGS124-1	-	91	455	437	105	494
	-	39	85	86	49	77
16 PORTGS129-1	-	88	338	414	60	459
	-	36	60	80	30	72
17 TXNS102	-	41	390	392	146	452
	-	27	72	71	52	72
18 TXNS296	-	92	447	446	142	481
	-	37	78	78	62	74
Location Means	552	75	342	413	138	434
	85	31	74	80	53	74

Numbers followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

<sup>1</sup>Excluded from means due to missing entries.

<sup>2</sup>FRM graded by size: > 1 7/8".

U.S. No. 1's - Late Harvest

(CWT/A)

CA	CO	ID	NM	OR	WA	Entry
TUL	SLV <sup>1</sup>	AB	KIM	HRM	KLM	OTH
343	245	286	242	368	409	398
	65	52	67	52	85	52
425	326	444	309	514	620	439
	82	79	86	63	89	81
252	297	222	197	260	361	493
	67	81	73	69	78	69
-	327	-	-	-	-	-
501	257	491	372	539	646	435
	84	69	93	77	93	79
301	-	423	402	456	482	476
	70	-	85	74	88	72
302	-	454	357	347	477	378
	79	-	91	85	88	81
236	233	338	309	423	552	394
	67	66	81	76	86	70
340	335	283	326	128	520	479
	83	76	87	79	86	83
386	231	388	360	324	609	464
	70	53	77	71	79	73
484	-	433	417	327	613	507
	89	-	88	81	83	75
317	279	404	348	450	523	443
	71	71	77	75	88	69
149	216	297	262	351	382	187
	46	56	81	77	88	74
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
539	324	251	224	330	467	464
	91	80	70	62	73	69
449	359	303	246	301	395	529
	82	82	77	63	75	58
359	286	358	312	355	504	435
	75	70	81	72	84	72

WESTERN REGIONAL TABLE 5: 1999 Western Regional Potato Variety Trial - YIELD &gt; 10/12 OZ (CWT/A &amp; %) - EARLY AND LATE HARVEST

U.S. No. 1's &gt; 10/12 OZ - Early Harvest

U.S. No. 1's &gt; 10/12 OZ - Late Harvest

(CWT/A)															(CWT/A)														
No. Clone	CA	NM	OR			TX	WA	Entry	CA	CO	ID		NM	OR			WA	Entry											
			KRN <sup>1</sup>	CLV	HRM						MAL	AB		KIM	HRM <sup>2</sup>	KLM			MAL	OTH	Mean/Rank								
1 R. BURBANK	133	0	18	9	0	43	14	17	e	69	31	45	29	36	153	78	42	111	70	14	c								
	19	0	4	2	0	8	3	17		13	7	11	6	8	20	14	8	14	12	14									
2 RANGER R.	220	19	41	58	43	128	58	9	bcd	177	74	111	133	0	332	191	69	179	149	2	b								
	32	7	10	12	12	23	13	7		34	18	22	27	0	43	34	13	22	24	4									
3 R. NORKOTAH	302	3	50	19	14	207	59	8	bcd	125	90	19	8	3	80	229	81	228	97	11	bc								
	39	1	11	4	5	31	10	9		33	24	6	3	1	15	43	18	32	19	8									
4 SHEPODY	164	10	106	101	10	198	85	3	bc	-	105	-	-	-	-	-	-	-	-	-	-								
	31	4	22	21	5	34	17	3		-	26	-	-	-	-	-	-	-	-	-	-								
5 A88338-1	258	46	126	72	18	243	101	2	ab	303	31	290	177	111	400	177	147	439	256	1	a								
	42	18	34	15	9	41	23	2		51	8	55	37	19	49	36	26	58	41	1									
6 A8893-1	155	8	62	79	4	120	55	10	bcd	159	-	79	118	21	235	114	131	279	142	3	b								
	26	3	13	14	1	20	10	11		37	-	16	22	4	35	22	22	35	24	5									
7 A9014-2	-	19	31	93	25	210	76	5	bcd	165	-	189	70	31	155	82	218	225	142	4	b								
	-	8	8	19	8	39	16	4		43	-	38	17	8	26	19	43	32	28	3									
8 AC87079-3	264	6	39	71	14	125	51	11	bcd	90	13	60	81	31	166	74	78	307	111	9	bc								
	34	3	8	14	5	22	10	10		25	4	14	20	6	21	16	14	39	19	7									
9 AC87084-3	105	14	22	74	2	184	59	7	bcd	167	63	100	46	32	241	170	83	171	126	5	bc								
	12	5	6	18	1	36	13	6		41	14	31	11	21	38	32	14	39	28	2									
10 AC87138-4	86	1	21	18	2	111	31	14	de	164	17	83	49	7	150	123	60	227	108	10	bc								
	15	1	4	3	1	19	6	14		30	4	16	10	2	18	22	10	27	17	11									
11 AO87277-6	196	9	53	44	18	182	61	6	bcd	70	-	71	116	0	181	197	70	216	115	7	bc								
	33	3	13	8	7	27	12	8		13	-	14	23	0	22	34	12	27	18	10									
12 CO89036-10	248	5	12	35	8	55	23	16	e	156	25	73	57	85	163	106	85	247	122	6	bc								
	32	2	3	7	3	13	5	15		35	6	14	12	17	21	20	14	35	21	6									
13 NDD840-1	38	-	-	-	-	-	-	-		16	43	42	34	7	138	18	-	249	72	13	c								
	19	-	-	-	-	-	-	-		5	11	11	10	2	27	6	-	38	14	13									
14 PORTGNP3-138	-	0	25	17	12	117	34	13	cde	-	-	-	-	-	-	-	-	-	-	-	-								
	-	0	5	3	4	19	6	13		-	-	-	-	-	-	-	-	-	-	-	-								
15 PORTGS124-1	-	26	270	120	12	288	143	1	a	-	-	-	-	-	-	-	-	-	-	-	-								
	-	11	51	24	6	45	27	1		-	-	-	-	-	-	-	-	-	-	-	-								
16 PORTGS129-1	-	9	123	61	10	182	77	4	bcd	-	-	-	-	-	-	-	-	-	-	-	-								
	-	3	22	12	5	28	14	5		-	-	-	-	-	-	-	-	-	-	-	-								
17 TXNS102	-	3	26	5	6	96	27	15	de	-	-	-	-	-	-	-	-	-	-	-	-								
	-	2	5	1	2	15	5	16		-	-	-	-	-	-	-	-	-	-	-	-								
18 TXNS296	-	15	45	47	4	131	48	12	cde	-	-	-	-	-	-	-	-	-	-	-	-								
	-	6	8	8	1	20	9	12		-	-	-	-	-	-	-	-	-	-	-	-								
Location Means	181	11	63	54	12	154	59			145	63	68	71	24	186	143	93	229	122										
	28	5	13	11	4	26	12			30	15	19	16	7	26	27	17	31	22										

Numbers followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

<sup>1</sup>Excluded from means due to missing entries.<sup>2</sup>FRM graded by size: > 3".

WESTERN REGIONAL TABLE 6: 1999 Western Regional Potato Variety Trial - YIELD &lt; 4 OZ (CWT/A &amp; %) - EARLY AND LATE HARVEST

Yield &lt; 4 OZ - Early Harvest

(CWT/A)

No. Clone	CA	KRN <sup>1</sup>	NM	CLV <sup>2</sup>	HRM	MAL	TX	WA	OTH	Entry
										Mean/Rank
1 R. BURBANK	32	58	116	109	66	85	85	85	85	5 abc
	5	26	27	21	27	15	23	15	23	15
2 RANGER R.	16	61	50	49	39	39	48	15	15	ef
	2	20	12	10	11	7	12	17	12	17
3 R. NORKOTAH	21	68	68	89	82	45	70	8	bcde	8
	3	33	16	18	32	7	21	7	7	7
4 SHEPODY	12	69	43	48	52	43	51	13	ef	13
	2	26	9	10	28	7	16	12	12	12
5 A88338-1	10	50	19	47	45	29	38	17	f	17
	2	20	5	10	22	5	12	16	16	16
6 A8893-1	14	66	62	65	97	69	72	7	bcde	7
	2	25	13	12	31	11	18	9	9	9
7 A9014-2	-	53	58	40	70	30	50	14	ef	14
	-	21	15	8	22	6	14	15	15	15
8 AC87079-3	27	44	93	46	76	68	65	9	bcdef	9
	4	20	19	9	28	12	18	10	10	10
9 AC87084-3	42	98	45	47	74	32	59	11	cdef	11
	5	39	13	11	38	6	21	6	6	6
10 AC87138-4	61	68	109	130	111	107	105	1	a	1
	10	27	21	23	52	18	28	2	2	2
11 AO87277-6	17	95	57	50	47	57	61	10	bcdef	10
	3	30	14	9	18	9	16	13	13	13
12 CO89036-10	28	90	117	91	132	84	103	2	a	2
	4	35	34	17	44	20	30	1	1	1
13 NDD840-1	21	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-
14 PORTGNP3-138	-	59	73	150	101	66	90	4	ab	4
	-	30	15	28	38	11	24	3	3	3
15 PORTGS124-1	-	51	19	42	68	32	42	16	ef	16
	-	23	4	8	34	5	15	14	14	14
16 PORTGS129-1	-	65	55	64	56	46	57	12	def	12
	-	26	10	12	29	7	17	11	11	11
17 TXNS102	-	34	82	142	97	97	90	3	ab	3
	-	23	15	25	35	16	23	5	5	5
18 TXNS296	-	72	81	95	97	76	84	6	abcd	6
	-	29	14	17	30	12	20	8	8	8
Location Means	25	65	67	77	77	59	69			
	4	27	15	15	30	10	19			

Numbers followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

<sup>1</sup>Excluded from means due to missing entries.<sup>2</sup>CLV: < 6 oz shown. <sup>3</sup>FRM graded by size: < 1 7/8".

Yield &lt; 4 OZ - Late Harvest

(CWT/A)

	CA	CO	ID	NM	OR	WA	Entry
	TUL	SLV <sup>1</sup>	AB	KIM	HRM	KLM	OTH
46	202	89	102	66	109	66	80
9	43	21	22	15	14	12	16
27	69	42	34	61	56	24	63
5	17	8	7	11	7	4	12
24	65	77	71	75	81	20	60
6	18	25	25	22	15	4	13
-	58	-	-	-	-	-	-
-	14	-	-	-	-	-	-
13	89	15	27	39	38	15	24
2	24	3	6	7	5	3	4
15	-	55	66	64	88	23	60
4	-	11	12	12	13	4	10
17	-	31	47	46	60	43	28
4	-	6	11	12	10	10	5
26	116	66	68	68	102	51	62
7	33	16	17	14	13	11	11
12	70	29	61	21	47	20	57
3	16	9	15	14	8	4	9
37	182	91	103	85	124	53	112
7	42	18	20	21	15	10	19
49	-	48	45	66	90	24	56
9	-	10	9	17	11	4	10
23	107	105	87	62	127	49	85
5	27	20	19	12	17	9	14
44	153	69	65	47	77	74	-
14	39	19	19	12	15	26	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
29	74	93	107	121	112	28	104
5	18	26	30	27	16	5	18
28	57	73	68	100	119	18	88
5	13	19	17	25	18	3	14
28	104	63	68	66	88	36	68
6	25	15	16	16	13	8	12



WESTERN REGIONAL TABLE 7: 1999 Western Regional Potato Variety Trial - SPECIFIC GRAVITY - EARLY AND LATE HARVEST

Specific Gravity - Early Harvest (CWT/A)										Specific Gravity - Late Harvest (CWT/A)										
No. Clone	CA		OR		TX		WA		Entry Mean/Rank	CA TUL	CO SLV <sup>1</sup>	ID		NM		OR		WA		Entry Mean/Rank
	KRN <sup>1</sup>	HRM	HRM	MAL	SPR	OTH	OTH	AB				KIM	FRM	HRM	KLM	MAL	OTH			
1 R. BURBANK	1.087	1.076	1.077	1.061	1.075	1.072	5	abc	1.082	1.085	1.080	1.083	1.088	1.078	1.084	1.080	1.087	1.083	8	cde
2 RANGER R.	1.083	1.068	1.088	1.067	1.071	1.074	3	a	1.078	1.094	1.089	1.091	1.089	1.078	1.078	1.104	1.093	1.087	3	ab
3 R. NORKOTAH	1.075	1.069	1.074	1.056	1.073	1.068	14	abcd	1.072	1.082	1.074	1.072	1.089	1.067	1.068	1.075	1.070	1.073	14	f
4 SHEPODY	1.080	1.068	1.078	1.070	1.065	1.070	10	abcd	-	1.091	-	-	-	-	-	-	-	-	-	-
5 A88338-1	1.085	1.071	1.071	1.051	1.068	1.065	17	d	1.082	1.086	1.087	1.089	1.083	1.078	1.078	1.088	1.088	1.084	7	bcd
6 A8893-1	1.083	1.071	1.077	1.063	1.073	1.071	9	abcd	1.070	-	1.086	1.085	1.085	1.077	1.078	1.080	1.079	1.080	10	de
7 A9014-2	-	1.073	1.079	1.065	1.076	1.073	4	abc	1.077	-	1.088	1.092	1.094	1.075	1.077	1.089	1.087	1.085	6	abc
8 AC87079-3	1.089	1.073	1.090	1.058	1.078	1.075	1	a	1.070	1.098	1.089	1.094	1.093	1.079	1.079	1.098	1.090	1.087	4	ab
9 AC87084-3	1.089	1.072	1.081	1.057	1.076	1.071	8	abcd	1.078	1.101	1.094	1.094	1.090	1.077	1.083	1.101	1.090	1.088	2	a
10 AC87138-4	1.080	1.071	1.083	1.060	1.077	1.073	5	abc	1.079	1.094	1.089	1.094	1.087	1.078	1.077	1.098	1.087	1.086	5	abc
11 AO87277-6	1.087	1.075	1.089	1.056	1.078	1.074	2	a	1.085	-	1.090	1.090	1.093	1.078	1.084	1.100	1.089	1.089	1	a
12 CO89036-10	1.076	1.065	1.080	1.053	1.068	1.067	15	bcd	1.073	1.090	1.083	1.088	1.082	1.073	1.072	1.091	1.082	1.080	9	de
13 NDD840-1	-	-	-	-	-	-	-	-	1.070	1.085	1.084	1.086	1.086	1.074	1.073	-	1.083	1.079	11	e
14 PORTGNP3-138	-	1.064	1.073	1.055	1.073	1.066	16	cd	-	-	-	-	-	-	-	-	-	-	-	-
15 PORTGS124-1	-	1.066	1.082	1.065	1.066	1.070	11	abcd	-	-	-	-	-	-	-	-	-	-	-	-
16 PORTGS129-1	-	1.070	1.086	1.060	1.072	1.072	7	abc	-	-	-	-	-	-	-	-	-	-	-	-
17 TXNS102	-	1.069	1.077	1.058	1.074	1.069	12	abcd	1.067	1.093	1.074	1.074	1.091	1.068	1.070	1.080	1.073	1.075	12	f
18 TXNS296	1.068	1.076	1.059	1.072	1.069	13	abcd	1.071	1.085	1.077	1.073	1.073	1.088	1.065	1.069	1.076	1.072	1.074	13	f
Location Means	1.083	1.070	1.080	1.060	1.073	1.071			1.075	1.090	1.085	1.086	1.088	1.075	1.076	1.089	1.084	1.082		

\*Numbers followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

<sup>1</sup>Excluded from means due to missing entries.

WESTERN REGIONAL TABLE 8: 1999 Western Regional Potato Variety Trial - AVERAGE TUBER SIZE, AND TUBER SHAPE

No. Clone	Average Tuber Size (oz)												Tuber Shape (1.5 length/width ratio: 1 = round, 5 = long)																				
	Early Trial						Late Trial						Early Trial						Late Trial														
	OR			TX			WA			ID			OR			WA			CA			CO			ID			OR			WA		
	HRM	SPR	OTH	Mean	AB	KIM	HRM	OTH	Mean	AB	KIM	HRM	OTH	Mean	CA	CO	ID	OR	WA	TUL	SLV	AB	KIM	HRM	KLM	MAL	OTH	Mean					
1 R. BURBANK	4.8	3.0	6.0	4.6	5.4	4.9	7.0	7.1	6.1					4.0	5.0	5.0	5.0	4.0	4.6	4.0	5.0	4.0	4.0	5.0	5.0	5.0	3.7	4.5					
2 RANGER R.	6.1	5.7	7.9	6.6	7.2	8.0	9.5	7.8	8.1					4.8	5.0	4.5	5.0	4.0	4.7	4.8	5.0	4.5	4.8	5.0	5.0	3.8	3.8	4.6					
3 R. NORKOTAH	6.0	3.7	8.2	6.0	4.8	4.3	6.1	7.7	5.7					4.0	4.5	3.8	4.0	4.0	4.1	4.0	5.0	4.0	4.3	5.0	5.0	3.3	3.0	4.2					
4 SHEPODY	7.7	3.9	9.0	6.9	-	-	-	-	-					4.3	3.5	3.0	4.0	4.0	3.8	-	5.0	-	-	-	-	-	-	-					
5 A88338-1	8.3	4.7	9.3	7.4	10.5	8.4	10.1	12.5	10.4					3.8	3.0	3.5	4.3	4.0	3.7	3.5	4.0	3.5	3.8	3.5	3.0	3.8	3.0	3.5					
6 A8893-1	6.2	3.7	6.9	5.6	6.6	6.6	6.1	8.9	7.0					3.0	2.7	3.5	3.9	3.0	3.2	3.8	-	3.8	3.8	4.0	3.0	3.5	2.8	3.5					
7 A9014-2	5.9	5.0	9.2	6.7	8.4	6.1	7.3	4.9	6.7					-	3.0	4.0	3.8	4.0	3.7	4.3	-	4.0	3.8	3.5	4.0	3.5	3.2	3.8					
8 AC87079-3	5.3	3.2	7.0	5.2	5.7	5.6	6.0	8.7	6.5					3.0	3.0	4.0	4.1	3.0	3.4	4.0	4.0	4.0	4.0	3.0	2.5	3.0	3.3	2.6	3.5				
9 AC87084-3	5.8	3.4	8.3	5.8	5.8	5.4	8.6	5.2	6.3					2.7	2.5	2.0	2.9	3.0	2.6	3.5	4.0	3.0	3.8	4.5	4.5	3.5	3.5	4.1					
10 AC87138-4	5.1	2.6	5.8	4.5	5.6	5.0	6.4	8.0	6.2					4.0	5.0	3.8	3.8	4.5	3.6	4.0	5.0	3.8	3.8	4.5	4.5	3.5	3.5	4.1					
11 AO87277-6	6.2	4.8	7.7	6.2	6.7	6.9	7.4	8.2	7.3					4.3	3.5	3.0	4.3	3.5	3.7	4.0	-	4.8	4.0	3.5	4.0	3.0	3.5	3.8					
12 CO89036-10	5.3	3.0	5.5	4.6	5.1	5.2	6.1	8.4	6.2					3.8	3.0	2.3	3.5	3.3	3.2	4.3	4.0	3.0	3.3	2.5	3.0	2.3	3.2	3.2					
13 NDD840-1	-	-	-	-	5.1	5.1	6.6	8.5	6.3					3.7	-	-	-	-	-	3.5	4.0	2.3	3.5	-	4.0	-	3.0	3.4					
14 PORTGNP3-138	5.6	3.4	6.8	5.3	-	-	-	-	-					-	4.0	3.5	3.5	4.0	3.8	-	-	-	-	-	-	-	-	-					
15 PORTGS124-1	10.5	4.1	10.1	8.2	-	-	-	-	-					-	4.0	3.7	3.5	3.5	3.7	-	-	-	-	-	-	-	-	-					
16 PORTGS129-1	7.6	3.3	8.3	6.4	-	-	-	-	-					-	3.5	3.0	4.0	4.0	3.6	-	-	-	-	-	-	-	-	-					
17 TXNS102	6.0	3.7	6.0	5.2	4.7	4.2	6.1	6.6	5.4					-	4.5	3.8	4.0	4.0	4.1	4.3	5.0	4.0	4.8	5.0	4.5	3.5	3.3	4.3					
18 TXNS296	6.1	3.4	6.7	5.4	5.5	5.3	6.1	7.4	6.1					-	4.5	4.5	4.5	3.5	4.3	4.0	5.0	4.3	4.8	5.0	4.5	4.0	3.0	4.3					
Location Means	6.4	3.8	7.6	5.9	6.2	5.8	7.1	7.9	6.7					3.7	3.7	3.5	4.0	3.7	3.7	4.0	4.6	3.8	4.0	4.0	4.0	4.0	3.5	3.2	3.8				

WESTERN REGIONAL TABLE 9: 1999 Western Regional Potato Variety Trial - EXTERNAL DEFECTS MEANS OF LOCATIONS - GROWTH CRACKS, SECOND GROWTH, SHATTER BRUISE, AND SCAB<sup>1</sup>

No. Clone	Growth Cracks		Second Growth		Shatter Bruise			Scab	
	Early Trial	Late Trial	Early Trial	Late Trial	Early Trial	Late Trial	AB <sup>2</sup>	Early Trial	Late Trial
1 R. BURBANK	4.2	3.8	4.4	3.7	5.0	4.5	3.2	5.0	5.0
2 RANGER R.	4.4	4.5	4.8	4.7	5.0	4.5	2.9	4.4	4.4 MAL 2.0
3 R. NORKOTAH	4.5	5.0	5.0	4.9	5.0	4.6	2.5	4.9	4.6
4 SHEPODY	4.8	-	4.4	-	5.0	-	-	3.7 MAL 1.5	-
5 A88338-1	4.7	4.2 SLV 2.0	4.9	4.6	5.0	4.3	2.5	4.9	4.9
6 A8893-1	4.7	4.6	4.8	4.9	4.8	3.8	3.0	4.9	4.8
7 A9014-2	4.7	4.9	4.8	4.9	4.8	3.2	3.0	5.0	4.8
8 AC87079-3	4.5	4.6	4.9	4.9	4.7	3.9	3.0	5.0	4.9
9 AC87084-3	4.2	4.2 SLV 2.0	4.8	5.0	4.3 HRM 2.3	3.5 HRM 2.0	3.3	5.0	4.4 MAL 1.3
10 AC87138-4	4.5	4.4 SLV 3.0	5.0	4.9	4.9	4.8	2.4	4.4	4.2
11 A087277-6	4.5	4.9	5.0	5.0	4.9	3.5	3.4	4.6	4.5 MAL 2.3
12 C089036-10	4.7	4.6	4.9	5.0	4.8	3.4 HRM 2.0	2.9	4.3 MAL 2.0	4.0 MAL 1.0
13 NDD840-1	-	4.7	-	4.6 SLV 3.0	-	3.9	3.2	-	5.0
14 PORTGNP3-138	4.8	-	4.9	-	4.9	-	-	4.7	-
15 PORTGS124-1	4.6	-	4.5	-	5.0	-	-	3.9 MAL 1.6	-
16 PORTGS129-1	4.9	-	4.1	-	5.0	-	-	3.8 MAL 1.3	-
17 TXNS102	4.6	4.8	3.4 OTH 2.5	4.8	5.0	4.8	2.5	4.8	4.6 MAL 2.5
18 TXNS296	5.0	4.8	5.0	4.7	5.0	4.6	2.5	4.8	4.7
Entry Means	4.6	4.6	4.7	4.7	4.9	4.1	2.9	4.6	4.6

<sup>1</sup>All scores [1-5(none)]. Individual trial sites with extreme values are listed to the left of the entry means.

<sup>2</sup>Aberdeen shatter scores reflect dropping from shatter chamber [1-5(none)].

WESTERN REGIONAL TABLE 10: 1999 Western Regional Potato Variety Trial - INTERNAL DEFECTS MEANS OF LOCATIONS - HOLLOW HEART/BROWN CENTER, INTERNAL BROWN SPOT, VASCULAR DISCOLORATION/NET NECROSIS, AND BLACKSPOT<sup>1</sup>

No. Clone	Percent Hollow Heart Plus Brown Center		Percent Internal Brown Spot		Percent Net Necrosis/ Vascular Discoloration		Blackspot Bruise [1-5(none)]		ID <sup>2</sup>
	Early Trial	Late Trial	Early Trial	Late Trial	Early Trial	Late Trial	Early Trial	Late Trial	
1 R. BURBANK	12	OTH 34	7	OTH 20	4	1	3	4.5	4.2 SLV 2.6 2.8
2 RANGER R.	0	3	TUL 17	1	2	1	9	HRM 26	4.3 4.4 1.5
3 R. NORKOTAH	0	4	4	0	0	0	4	2	5.0 4.9 2.7
4 SHEPODY	5	-	-	2	2	-	10	5.0	-
5 A88338-1	1	12	KLM 35	6	KRN 25	1	3	6	TUL 25 5.0 4.7 3.4
6 A8893-1	2	14	KLM 30	6	KRN 25	0	3	0	5.0 4.7 2.9
7 A9014-2	5	6	TUL 25	0	1	4	4	4.6	4.1 3.7
8 AC87079-3	8	OTH 22	20	KLM 48	3	5	HRM 25	5	4.4 OTH 3.8 4.5 2.4
9 AC87084-3	5	22	AB, KLM 30	4	4	HRM 16	4	4.8	SLV 2.1 3.0 OTH 1.9 1.2
10 AC87138-4	4	21	KLM 58	4	0	4	TUL 17	5.0	3.4 SLV 2.6 1.2
11 A087277-6	1	1	1	4	0	3	1	4.8	4.7 2.5
12 CO89036-10	1	2	2	4	1	0	1	4.9	4.2 3.9
13 NDD840-1	-	9	TUL 33	-	1	2	-	3.8	2.0
14 PORTGNP3-138	0	-	-	0	0	1	-	4.9	-
15 PORTGS124-1	8	-	-	1	-	13	HRM 20	4.5	-
16 PORTGS129-1	3	-	-	1	-	22	HRM 36	4.5	-
17 TXNS102	1	5	5	1	0	1	2	5.0	4.8 2.6
18 TXNS296	1	5	5	0	1	1	1	5.0	5.0 2.6
<sup>a</sup> Entry Means	3	9	3	3	1	5	2	4.8	4.3 2.5

<sup>1</sup>Individual trial sites with extreme values are listed to the left of the entry means.

<sup>2</sup>Aberdeen and Kimberly Idaho blackspot scores reflect abrasive peel test [1-5(none)].



WESTERN REGIONAL TABLE 11: 1999 Western Regional Potato Variety Trial - FRENCH FRY COLOR (00-4.0(darkest)), AND PERCENT SUGAR ENDS

No. Clone	Field Fry										Fry 45										Fry 40										% Sugar Ends																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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1	R. BURBANK	2.0	0.5	0.5	1.0		2.0	1.1	0.8	0.9	1.0	1.0	1.1		3.7	3.5	3.6				13	21	0	3	9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										</

WESTERN REGIONAL TABLE 12: 1999 Western Regional Potato Variety Trial - DISEASE EVALUATION AND METRIBUZIN REACTION

No. Clone	Vert. Wilt/Early Dying		Early Blight <sup>1</sup> (0-9)	Common Scab <sup>1</sup> (0-5)	Late Blight <sup>3</sup>		Severe Leafroll		% Severe Tuber	Fusarium Dry Rot <sup>1</sup> (0-5)	Erwinia Soft Rot <sup>1</sup> (0-5)	Metrribuzin Reaction <sup>4</sup> AB
	A8 <sup>1</sup> (0-9)	HRM <sup>2</sup> (1-9)			Foliar (1-9)	Tuber % by Wt.	A8 <sup>1</sup> (%)	HRM <sup>2</sup> (1-5)				
1 R. 8UR8ANK	5.7	5.4	7.3	2	4.2	7.5	8	3.3	0	4.3	3.7	MS
2 RANGER R.	3.3	2.9	6.3	3	3.2	2.5	40	3.4	20	2.7	2.1	-
3 R. NORKOTAH	8.7	8.8	8.7	1	7.5	2.5	4	2.1	0	1.8	3.8	MR
4 SHEPODY	5.8	4.1	7.7	3	7.0	2.5	35	3.3	8	2.9	3.1	VS
5 A88338-1	1.5	3.4	3.8	0	2.2	5.0	37	2.5	20	3.6	0.9	MR
6 A8893-1	7.0	4.1	7.7	0	7.7	10.0	5	3.1	8	3.5	3.9	R
7 A9014-2	2.7	5.4	7.3	1	5.0	0.0	0	3.3	2	4.1	0.6	MS
8 AC87079-3	4.5	4.7	7.2	1	-	-	-	2.3	-	-	3.5	MR
9 AC87084-3	1.8	5.4	5.3	0	-	-	6	2.5	34	4.1	2.1	VS
10 AC87138-4	2.7	6.1	6.5	3	-	-	-	3.1	-	-	1.4	R
11 AO87277-6	4.0	5.9	6.7	2	4.5	2.5	8	2.8	0	4.3	3.5	R
12 CO89036-10	3.7	3.6	6.2	1	-	-	-	2.0	-	-	3.7	R
13 NDD840-1	2.3	4.5	5.5	2	-	-	36	3.5	13	4.1	2.1	R
14 PORTGNP3-138	-	8.6	-	-	8.2	2.5	-	3.3	-	-	-	-
15 PORTGS124-1	-	3.4	-	-	6.7	7.5	-	3.6	-	-	-	-
16 PORTGS129-1	7.0	4.3	8.2	4	6.7	10.0	-	3.1	-	-	3.2	-
17 TXNS102	8.2	7.7	8.3	1	-	-	-	-	-	-	4.4	-
18 TXNS296	6.8	7.7	8.0	2	-	-	-	-	-	-	4.1	-
Entry Means	4.7	5.3	6.9	2	5.7	4.8	18	3.0	11	3.5	2.9	
LSD (.05)	1.7		1.2	1.2							1.6	

<sup>1</sup> Evaluations made at Aberdeen, Idaho by Dennis Corsini; scale as indicated with highest number being most severe.<sup>2</sup> Evaluations made at Hermiston, Oregon by Dan Hane; scale as indicated with highest number being most severe.<sup>3</sup> Evaluations made at Corvallis, Oregon by Al Mosley; scale as indicated with highest number being most severe.<sup>4</sup> Evaluations made at Aberdeen, Idaho by Steve Love: R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible.

WESTERN REGIONAL TABLE 13: 1999 Western Regional Potato Variety Trial - SOLIDS, DEXTROSE, SUCROSE, PROTEIN, VITAMIN C,  
AND GLYCOALKALOIDS - ABERDEEN

No. Clone	Solids		Sugars		Protein (%DWB) <sup>1</sup>	Vitamin C (mg/100g FWB) <sup>1</sup>	Glycoalkaloids <sup>2</sup> (mg/100gFWB) <sup>1</sup>
	Oven Dry (%)	Dextrose (%DWB) <sup>1</sup>	Sucrose (%DWB) <sup>1</sup>				
1 RUSSET BURBANK	23.2	0.07	0.18		4.8	22.4	8.2
2 RANGER RUSSET	24.7	0.11	0.27		5.0	35.5	5.1
3 RUSSET NORKOTAH	21.4	0.18	0.16		4.6	23.5	3.7
4 SHEPODY							
5 A88338-1	24.3	0.10	0.23		5.8	23.1	7.6
6 A8893-1	24.5	0.11	0.27		6.0	25.8	6.1
7 A9014-2	25.0	0.04	0.46		6.2	30.4	1.6
8 AC87079-3	23.9	0.09	0.31		6.4	30.7	9.9
9 AC87084-3	25.0	0.10	0.30		5.1	33.3	9.4
10 AC87138-4	24.5	0.11	0.23		4.8	23.7	5.3
11 AO87277-6	25.2	0.05	0.21		5.5	32.0	9.7
12 CO89036-10	21.8	0.19	0.25		6.2	26.9	3.1
13 NDD840-1	23.8	0.18	0.24		5.6	26.6	5.9
17 TXNS102	21.2	0.16	0.16		5.2	23.3	3.8
18 TXNS296	21.7	0.19	0.20		5.2	26.5	3.5
Entry Means	23.6	0.12	0.25		5.5	27.4	5.9

<sup>1</sup> DWB = Dry Weight Basis; FWB = Fresh Weight Basis

<sup>2</sup> Glycoalkaloids: The 1999 Lenape check from Aberdeen was 28.8 mg/100g

WESTERN REGIONAL TABLE 14: 1999 Western Regional Potato Variety Trial - MERIT SCORES [1-5(best)]

No. Clone	Process										Fresh									
	CO					ID					CA					OR				
	SLV		A8			KIM		A8			TUL		SLV			HRM		HRM		
	L		L	L		L		L	L		L		L	L		E		L	L	
											KRN		TX		SPR		E		Mean/Rank	
											E									
1 R. 8UR8ANK	3.0	3.5	3.5	3.5	1.0	3.0	2.8	6			1.0	2.9	2.0	2.5	1.0	2.0	2.4	2.0	15	
2 RANGER R.	5.0	4.0	4.0	2.0	2.0	4.0	3.8	3			2.0	3.9	4.0	3.5	2.5	2.0	3.3	3.0	9	
3 R. NORKOTAH	4.0	2.0	1.0	2.0	2.0	1.0	2.0	11			3.5	3.0	3.0	3.3	3.3	4.0	3.2	3.3	5	
4 SHEPODY	2.0	-	-	2.0	-	-	-	-			2.3	-	3.0	-	1.0	-	2.5	2.2	13	
5 A88338-1	1.0	2.5	4.5	3.0	3.0	3.0	2.8	7			2.5	2.8	2.0	2.3	2.3	2.0	2.9	2.5	12	
6 A8893-1	-	4.0	4.5	2.0	4.0	4.0	3.6	4			3.3	3.4	-	3.8	3.3	1.0	4.0	3.0	7	
7 A9014-2	-	5.0	5.0	4.0	4.0	4.0	4.5	1			-	2.3	-	4.8	3.5	3.0	3.8	3.4	4	
8 AC87079-3	2.0	2.5	3.0	3.0	3.0	1.0	2.3	9			2.8	2.9	1.0	3.8	3.3	3.0	1.0	3.0	11	
9 AC87084-3	4.0	3.0	3.5	1.0	1.0	1.0	2.5	8			2.0	3.6	5.0	2.8	3.0	1.0	2.4	2.6	10	
10 AC87138-4	3.0	2.0	4.0	4.0	4.0	4.0	3.4	5			3.0	2.5	2.0	3.5	2.8	4.0	2.5	3.0	8	
11 AO87277-6	-	5.0	5.0	3.0	3.0	3.0	4.0	2			3.3	4.0	-	3.5	3.5	3.0	3.1	3.2	6	
12 CO89036-10	1.0	3.0	2.5	1.0	1.0	1.0	1.7	15			2.0	2.3	2.0	2.8	3.3	1.0	2.9	2.2	14	
13 NDD840-1	1.0	3.0	3.0	-	1.0	1.0	2.0	11			2.3	2.0	1.0	2.8	2.8	-	1.0	-	16	
14 PORTGNP3-138	-	-	-	1.0	-	-	-	-			-	-	-	-	-	4.0	-	2.9	3.5	3
15 PORTGS124-1	-	-	-	2.0	-	-	-	-			-	-	-	-	-	1.0	-	2.8	1.9	17
16 PORTGS129-1	-	-	-	2.0	-	-	-	-			-	-	-	-	-	1.0	-	2.4	1.7	18
17 TXNS102	3.0	2.0	1.5	2.0	1.0	1.0	1.9	14			-	4.1	4.0	3.0	3.0	5.0	3.0	3.9	1	
18 TXNS296	3.0	2.0	1.5	2.0	2.0	2.0	2.1	10			-	3.8	5.0	3.8	3.0	5.0	2.0	3.2	3.7	2
Location Means	2.7	3.1	3.3	2.2	2.4	2.8					2.5	3.1	2.8	3.3	3.0	2.5	2.5	2.9	2.8	

WESTERN REGIONAL TABLE 15: 1999 Western Regional Potato Variety Trial - ENTRY SUMMARY<sup>1</sup>

No. Clone	Year in Trial	Use	Total Yield <sup>2</sup>	US#1's Yield <sup>2</sup>	% US#1's <sup>2</sup>	Tuber Size (oz)		Tuber Shape	Specific Gravity <sup>2</sup>	Fry 45 Color	Merit Score		Noted Problems	Disposition 2000 <sup>3</sup>
						Early	Late				Process	Fresh		
1 R. BURBANK	Ck	Dual	569	355	63	4.6	6.1	Long	1.083	1.1	2.8	2.0		CHECK
2 RANGER R.	Ck	Dual	595	464	78	6.6	8.1	Long	1.087	1.0	3.8	3.0		CHECK
3 R. NORKOTAH	Ck	Fresh	440	336	75	6.0	5.7	Long	1.073	1.5	2.0	3.3		CHECK
4 SHEPODY	Ck	Proc	402	255	-	6.9	-	Obl-Lng	-	-	-	2.2		CHECK
5 A88338-1	2	Dual	603	500	83	7.4	10.4	Obl-Lng	1.084	1.1	2.8	2.5	HH, Net Necrosis, EB-Tuber	DROP
6 A8893-1	1	Dual	572	452	79	5.6	7.0	Oblong	1.080	0.5	3.6	3.1	HH	CONT
7 A9014-2	1	Dual	490	412	84	6.7	6.7	Obl-Lng	1.085	0.1	4.5	3.4	Shattering(late)	CONT
8 AC87079-3	1	Fresh	534	415	78	5.2	6.5	Oblong	1.087	1.2	2.3	2.6	HH, Sugar Ends	CONT
9 AC87084-3	3	Dual	437	365	84	5.8	6.3	Rnd-Obl	1.088	1.4	2.5	2.6	HH, Blackspot, EB-Tuber	RTC
10 AC87138-4	1	Dual	598	450	76	4.5	6.2	Obl-Lng	1.086	0.6	3.4	3.0	HH, Blackspot, Sugar Ends	CONT
11 AO87277-6	3	Dual	590	484	83	6.2	7.3	Obl-Lng	1.089	0.5	4.0	3.2	Lower SG(early), Sugar Ends	RTC
12 CO89036-10	1	Dual	567	439	78	4.6	6.2	Oblong	1.080	2.2	1.7	2.2	Lower SG, Blackspot, Sugar Ends, Net Necrosis	DROP
13 NDD840-1	3	Dual	411	308	73	-	6.3	Oblong	1.079	2.3	2.0	2.0	Sugar Ends, Net Necrosis	RTC
14 PORTGNP3-138	1	Fresh	412	284	62	5.3	-	Obl-Lng	1.066	-	-	3.5		CONT
15 PORTGS124-1	1	Proc	424	316	67	8.2	-	Obl-Lng	1.070	-	-	1.9	Net Necrosis/VD	CONT
16 PORTGS129-1	1	Proc	435	272	56	6.4	-	Obl-Lng	1.072	-	-	1.7	Net Necrosis/VD, Scab	CONT
17 TXNS102	1	Fresh	546	404	74	5.2	5.4	Long	1.075	1.7	1.9	3.9	Smaller tuber size, Erwinia, 2nd	CONT
18 TXNS296	1	Fresh	553	406	74	5.4	6.1	Long	1.074	1.4	2.1	3.7	Erwinia	CONT
Entry Means			510	384	74	5.9	6.7		1.080	1.2	2.8	2.8		

<sup>1</sup> Numeric values represent means across all trial locations.<sup>2</sup> Data shown from late trial results, unless the entry was in the early trial only.<sup>3</sup> RTC = Regional Testing Completed after 3 Years; CONT = Continued in Trial; DROP = Dropped From Trial; CHECK = Control



WESTERN REGIONAL TABLE 16: 1999 Western Regional Potato Variety Trial - 3 YEAR SUMMARY OF GRADUATING ENTRIES

Clone	1997					1998					1999				
	Total Yield <sup>1</sup> & (rank)	US #1 Yield <sup>1</sup> & %	SG	Fry 45	Merit Score Fresh Proc	Total Yield <sup>1</sup> & (rank)	US #1 Yield <sup>1</sup> & %	SG	Fry 45	Merit Score Fresh Proc	Total Yield <sup>1</sup> & (rank)	US #1 Yield <sup>1</sup> & %	SG	Fry 45	Merit Score Fresh Proc
AC87084-3	505 (14/17)	443 77	1.089	2.1	3.1 3.5	409 (13/17)	344 83	1.083	2.2	3.4 2.6	437 (13/14)	365 84	1.088	1.4	2.6 2.5
AO87277-6	582 (7/17)	559 78	1.087	1.3	4.6 3.4	482 (5/17)	364 78	1.085	0.6	3.0 4.2	590 (4/14)	484 83	1.089	0.5	3.2 4.0
NDD840-1	547 (10/17)	480 83	1.077	2.5	1.8 3.1	384 (15/17)	289 77	1.078	1.9	2.4 2.5	411 (14/14)	308 73	1.079	2.3	2.0 2.0
R. BURBANK	538 (11/17)	437 64	1.082	1.6	2.7 3.2	482 (6/17)	265 56	1.077	1.6	1.9 2.1	569 (6/14)	355 63	1.083	1.1	2.0 2.8
<b>Trial Mean</b>	548 80	441 80	1.081	1.9	3.2 2.7	452	332 74	1.077	1.9	2.9 2.6	536	414 77	1.082	1.2	2.8 2.8

3 Year Average (1997-1999)

Clone	Total Yield <sup>1</sup>	US #1 Yield <sup>1</sup> & %	SG	FRY 45	Merit Score Fresh Proc
AC87084-3	450	384 81	1.087	1.9	3.0 2.9
AO87277-6	551	469 81	1.087	0.8	3.6 3.9
NDD840-1	447	359 78	1.078	2.2	2.1 2.5
R. BURBANK	530	352 61	1.081	1.4	2.2 2.7
<b>Trial Mean<sup>2</sup></b>	512	396 77	1.080	1.7	3.0 2.7

<sup>1</sup> (CWT/A)<sup>2</sup> Mean of all trial entries 1997-1999

## COLORADO

D. G. Holm and F. G. Popiel<sup>1</sup>

### Objectives

The primary objectives of the Colorado Potato Breeding and Selection Program are to develop new potato cultivars with increased yield, improved quality, resistance to diseases and pests, and tolerance to environmental stresses. Other objectives are to provide a basic seed source to growers for seed increase and commercial testing; and to evaluate promising selections for potential seed export (interstate and international).

The primary emphasis is placed on developing dual purpose fresh and processing russets (70-80%). The balance of the breeding effort is devoted to developing reds (10-15%), chippers (5-10%), and specialty cultivars (5%). The development of "low input" cultivars, primarily for reduced nitrogen and fungicide input has always been emphasized. A major concentration has been placed on incorporating late blight resistant germplasm into the breeding program over the last four years.

### Breeding Program

Sixty-eight parental clones were intercrossed in 1999. Seeds from 406 combinations were obtained. Approximately 35,500 seedlings tubers representing 134 families were produced from 1998 crosses for initial field selection in 2000. Second through fourth size tubers will be distributed to Idaho, Minnesota, Oregon, Texas, and Alberta, Canada.

Additional seedling tubers were obtained from Dr. J. J. Pavsek, USDA-ARS, Aberdeen, Idaho; Dr. Dermot Lynch, Agriculture Canada, Lethbridge, Alberta; and Dr. J. Creighton Miller, Texas A&M University, College Station, Texas.

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### Selection Program

Approximately 79,700 first-year seedlings were grown in 1999 with 847 being selected for subsequent planting, evaluation, and increase in future years. Another 1,074 clones were in 12-hill, preliminary, and intermediate stages of selection. Of these, 299 were saved for further observation. Twenty-five advanced selections were saved and will be increased pending final evaluations. Another 178 selections were maintained for germplasm development, breeding, other experimental purposes, or seed increases for the other programs.

Table 1 summarizes the cultural information for the trials conducted at the San Luis Valley Research Center in 1999.

**Advanced Yield Trial.** Fifteen entries, 13 advanced selections and 2 cultivars, were evaluated in the advanced yield trial. Results on yield, grade, postharvest quality and processing characteristics are summarized in Tables 2-4.

The highest yielding selections were TC1682-1 and Keystone Russet (AC83064-1) with 457 and 430 cwt/A, respectively. Trial average was 381 cwt/A. Percentage of US No. 1 tubers averaged 79.4 and ranged from 69.9 to 89.6.

The only selection demonstrating severe blackspot susceptibility was CO85026-4. AC92009-4 had a long dormancy (126 days). Clones expressing the greatest resistance to enzymatic browning were Keystone Russet and Russet Nugget. Clones with the greatest susceptibility to enzymatic browning were AC91365-1 and CO92077-2.

Clone with acceptable fry colors were Silverton Russet (AC83064-6), AC91014-2, AC92009-4, CO92027-2, CO92077-2, NDC5372-1, and TC1675-1.

Advanced selections to be entered in the 2000 Southwestern Regional Trial include AC90636-3, AC91014-2, and AC91365-1.

**Southwestern Regional Trial.** Thirteen selections and four cultivars were compared in the Colorado Southwestern Regional Trial. Colorado entries were AC89536-5 and AC90017-2. AC89536-5 will be entered in the 2000 Western Regional Trials. Selection AC90017-2 will be discarded from further evaluation due to small tuber size and excessive



growth cracking observed in the Colorado seed increase.

Results of this trial are presented in the Southwestern Regional Trial report elsewhere in this publication.

**Western Regional Main Trial.** Eight selections and five cultivars were entered in the Colorado Western Regional Main Trial. Tables 7A-E present the data collected on these selections in the Colorado trial.

The number of entries in this trial has been significantly reduced since 1995. This is due to the exclusion of all entries coming from areas where seed stocks potentially have been exposed to late blight.

Selections entered by Colorado in 1999 included AC87079-3, AC87084-3, AC87138-4, and CO89036-10. AC87084-3 graduated from the Western Regional Trial having completed three years of evaluation in 1999. Selection CO89036-10 was withdrawn and discarded from further evaluations because of poor overall performance. The other Colorado entries will be tested again in 2000.

Results of this trial are presented in the Western Regional Trial report elsewhere in this publication.

**Advanced and Western Regional Chipping Trial.** The Colorado Western Regional Chip Trial also includes other chipping selections from the Colorado program that are not formally entered into the regional chip trials.

Eighteen entries, 13 selections and 5 cultivars, were included in the Colorado Western Regional Chip Trial. Trial results are presented in Tables 5-7.

Colorado entries in the 1999 Western Regional Chip Trials included AC87340-2 and AC89653-3. Both will be reentered in the 2000 trials. An advanced selection in this trial (not part of the formal Western Regional Chip Trial), CO92059-8 will be entered in the Southwestern Regional Trials in 2000.

The highest yielding selections were AC89653-3 and ATX85404-8. Trial average was 428 cwt/A. Chipeta was the least susceptible to blackspot bruising and Atlantic was the most susceptible.

None of the selections produced acceptable chips out of 40°F storage. The only selection showing

chipping potential after 40°F storage with reconditioning at 60°F was AC93377-5. Several selections have potential to chip out of 50°F or 50°F with reconditioning.

**Western Regional Red/Specialty Trial.** The Colorado Western Regional Red/Specialty Trial also includes other red selections from the Colorado program that were not formally entered into the regional red trials.

The Colorado trial included 13 entries, 10 selections and 3 cultivars. Trial results are summarized in Tables 8-9.

Selection CO89097-2 was entered by Colorado and will be reentered in the 2000 Western Regional Red/Specialty. An advanced selection (not part of the formal trial), NDC5281-2 will be entered in the Southwestern Regional Trials in 2000.

The highest yielding selection was CO93037-6 followed by CO89097-2. Several selections had very high yields of <4 oz tubers. Included were CO93037-6, NDC4069-4R/R (red fleshed), NDC5281-2, and W8497R. Larger tubers of W8497R tended to be very rough (hooded eyes).

Selections with high levels of resistance to blackspot bruising were CO86218-2, CO89097-2, and Cherry Red (DT6063-1R). Selections with susceptibility to blackspot bruising were NDC4069-4R/R and W8497R. Several selections were susceptible to enzymatic browning. Cherry Red was the most resistant to enzymatic browning.

**Grower Evaluations.** Grower evaluations were conducted on eight russets (AC83064-1, AC83064-6, AC87079-3, AC87084-3, AC87138-4, CO80011-5, CO86026-4, and CO89036-10), three reds (CO86218-2, CO89097-2, and DT6063-1R), and two chipping selections (AC87340-2 and BC0894-2).

Release notices for the cultivars AC83064-1 (Keystone Russet), AC83064-6 (Silverton Russet), and DT6063-1R (Cherry Red) are in preparation. Selections to be recommended for release and naming in 2000 are CO85026-5 (fresh market russet) and CO86218-2 (red). Selections that will continue to undergo grower evaluation are AC87079-3, AC87084-3, AC87138-4, AC87340-2, BC0894-2, and CO89097-2. Comparative data for these selections and standard cultivars is presented in Table 10.

Colorado initially entered BC0894-2 into the Western Regional Chip Trials in 1994. This selection graduated from this trial in 1996. BC0894-2 was also entered into the Snack Food Association (SFA) Trials in 1995-1997. This selection is still undergoing evaluation for commercial production and possible international seed export. CO86218-2 also shows potential for international seed export.

Selection CO80011-5 was discarded after several years of grower evaluation. Problems with PVY expression and sporadic problems with stand and tuber growth cracks contributed to this decision. CO89036-10 was also discarded primarily due to low yields.

Two new selections will be evaluated by growers in 2000. They are AC89536-5 and AC89536-3. AC89536-5 is a high yielding, medium maturing russet selection with fresh market potential. AC89536-3 is a chipping selection with high yield potential.

**Colorado Table 1.** Cultural information for the 1999 trials.

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LOCATION: San Luis Valley Research Center, Center, CO

SOIL TYPE: Sandy Loam

DATE:

Planted - 5/19/99

Hilled - 6/9/99

Vines Killed - 9/1/99 (sulfuric acid - 28 gal/A)

Harvested - 9/23/99

PLOT INFORMATION:

Size of Plots - 1 row x 25'

Spacing Between Hills - 12"

Spacing Between Rows - 34"

Hills Per Plot - 25

Number of Reps - 4

METHOD OF HARVEST:

Machine (Grimme 1-row)

FERTILIZER:

130 lbs N + 100 lbs P<sub>2</sub>O<sub>5</sub>/A (spring applied during row-out)

IRRIGATION:

Center Pivot -14.0" gross application (application frequency and amount based on ET)

Rainfall - 6.0"

INSECTICIDES APPLIED:

7/30/99 - Thiodan 3 EC (1.0 lb a.i./A)

8/13/99 - Thiodan 3 EC (1.0 lb a.i./A)

FUNGICIDES APPLIED:

6/30/99 - Manex (0.8 a.i./A)

7/09/99 - Bravo Ultrex (0.8 lbs a.i./A)

7/19/99 - Quadris (0.1 lbs a.i./A)

7/30/99 - Bravo Ultrex (0.8 lbs a.i./A)

8/07/99 - Quadris (0.1 lb a.i./A)

8/13/99 - Super Tin 80WP (2.6 oz a.i./A) + Curzate 60DF (2.0 oz a.i./A)

8/23/99 - Dithane DF (1.5 a.i./A)

8/31/99 - Champ 2 (0.6 lbs a.i./A) + Quadris (0.1 lbs a.i./A)

HERBICIDES APPLIED:

6/11/99 - Dual II Magnum (1.3 lbs a.i./A) + Sencor DF (0.9 lbs a.i./A)

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**Colorado Table 2.** Yield, grade, tuber shape, and skin type for Advanced Yield Trial clones - 1999.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type <sup>1</sup>
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC83064-1	430	386	89.6	109	34	L,Ru
AC83064-6	378	304	80.4	33	49	L,Ru
AC90636-3	375	298	79.4	24	73	Ob,Ru
AC91014-2	356	249	69.9	25	96	L,Ru
AC91365-1	385	301	77.9	39	79	L,Ru
AC92009-4	332	293	88.0	94	31	L,Ru
CO80011-5	355	271	76.4	53	42	Ob,Ru
CO85026-4	333	283	84.6	37	37	L,Ru
CO92027-2	343	247	71.7	8	95	L,Ru
CO92077-2	376	290	77.2	26	85	L,Ru
NDC5372-1	423	334	79.0	73	77	L,Ru
TC1675-1	421	298	70.9	48	100	Ob,Ru
TC1682-1	457	369	80.7	52	74	L,Ru
Russet Norkotah	389	342	88.0	122	44	L,Ru
Russet Nugget	361	277	76.8	47	80	Ob,Ru
Mean	381	303	79.4	53	66	-----
LSD <sup>2</sup> (0.05)	31	37	5.7	25	18	-----

<sup>1</sup>Tuber shape & skin type: Ob=oblong; L=long; Ru=russet.

<sup>2</sup>LSD=least significant difference.

**Colorado Table 3.** Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced Yield Trial clones - 1999.

Clone	Blackspot Index <sup>1</sup>			% Weight Loss <sup>2</sup>	Dormancy (Days) <sup>3</sup>	Enzymatic Browning <sup>4</sup>
	Bud End	Stem End	Average			
AC83064-1	4.9	5.0	5.0	3.4	68	4.8
AC83064-6	3.6	4.0	3.8	4.5	68	3.6
AC90636-3	3.1	3.1	3.1	5.3	103	3.8
AC91014-2	3.3	2.7	3.0	6.4	103	3.2
AC91365-1	3.4	3.4	3.4	6.6	103	1.6
AC92009-4	3.8	2.8	3.3	5.4	126	3.4
CO80011-5	3.5	2.8	3.2	4.9	96	3.6
CO85026-4	2.7	1.8	2.3	3.0	89	3.4
CO92027-2	3.8	3.1	3.5	6.8	75	3.0
CO92077-2	4.1	4.4	4.3	4.1	82	1.4
NDC5372-1	4.5	1.9	3.2	6.4	110	2.0
TC1675-1	4.2	3.2	3.7	2.6	110	3.4
TC1682-1	4.4	4.5	4.5	3.7	103	3.6
Russet Norkotah	4.7	3.4	4.1	4.2	96	3.2
Russet Nugget	3.6	3.7	3.7	3.5	96	4.4

<sup>1</sup> Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

<sup>2</sup> Tubers were stored at 45°F for 97 days.

<sup>3</sup> Days from harvest to first visible growth. Tubers were stored at 45°F.

<sup>4</sup> Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.



**Colorado Table 4.** Specific gravity, french fry color, and texture for Advanced Yield Trial clones - 1999.

Clone	Specific Gravity	Fry Color <sup>1</sup>		Fry Texture <sup>2</sup>	
		At Harvest	5 wks 50°F+ 8 wks 45°F	At Harvest	5 wks 50°F+ 8 wks 45°F
AC83064-1	1.085	3	4	3	3
AC83064-6	1.087	1	2	4	3
AC90636-3	1.094	2	3	3	3
AC91014-2	1.099	1	2	4	4
AC91365-1	1.092	3	3	3	3
AC92009-4	1.102	2	2	3	3
CO80011-5	1.085	2	3	3	3
CO85026-4	1.096	2	3	4	3
CO92027-2	1.099	1	1	4	4
CO92077-2	1.086	2	2	3	3
NDC5372-1	1.092	1	1	3	3
TC1675-1	1.096	1	2	4	4
TC1682-1	1.094	3	4	3	3
Russet Norkotah	1.086	3	3	3	3
Russet Nugget	1.097	2	3	4	4

<sup>1</sup> Fry color was rated on a 0 to 4 scale, with 0 being the lightest or best color. Color ratings of  $\leq 2$  are acceptable.

<sup>2</sup> Fry texture was rated on a 1 to 5 scale, with 5 indicating the cooked flesh was dry and mealy and 1 representing a soggy, wet texture.

**Colorado Table 5.** Yield, grade, tuber shape, and skin type for Advanced and Western Regional Chip Trial clones - 1999.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type <sup>1</sup>
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC87340-2	460	305	66.4	26	149	R,W
AC89653-3	476	297	62.4	24	178	R,W
AC93377-5	350	242	69.3	41	82	Ov,W
AC93395-5	396	297	74.7	66	100	R,W
AC93400-2	388	232	59.3	21	148	R,W
AF875-15	468	381	81.5	112	52	Ov,W
ATX85404-8	510	308	59.7	22	194	R,W
BC0894-2	383	302	78.6	69	73	R,W
CO92059-8	406	180	44.1	17	209	R,W
ND2676-10	367	235	63.9	17	124	R,W
NDC5118-2	406	209	51.4	2	191	Ov,W
NDC5433-5	457	217	47.3	13	229	R,W
Atlantic	446	391	87.4	176	40	R,W
Chipeta	486	345	70.6	55	93	R,W
Mean	428	281	65.5	47	133	----
LSD <sup>2</sup> (0.05)	68	66	7.9	32	29	----

<sup>1</sup>Tuber shape & skin type: R=round; Ov=oval; W=white.

<sup>2</sup>LSD=least significant difference.



**Colorado Table 6.** Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for for Advanced and Western Regional Chip Trial clones - 1999.

Clone	Blackspot Index <sup>1</sup>			% Weight Loss <sup>2</sup>	Dormancy (Days) <sup>3</sup>	Enzymatic Browning <sup>4</sup>
	Bud End	Stem End	Average			
AC87340-2	3.5	3.1	3.3	4.5	75	3.4
AC89653-3	3.9	3.4	3.7	4.4	68	4.8
AC93377-5	4.4	1.7	3.1	5.0	75	3.4
AC93395-5	3.2	1.6	2.4	5.5	75	3.8
AC93400-2	3.1	1.8	2.5	4.7	68	3.6
AF875-15	3.4	2.8	3.1	5.3	89	2.6
ATX85404-8	3.8	2.1	3.0	5.5	68	3.8
BC0894-2	3.6	3.2	3.4	4.9	89	2.4
CO92059-8	2.0	2.6	2.3	3.9	68	4.0
ND2676-10	4.1	2.9	3.5	4.0	89	3.6
NDC5118-2	3.2	2.4	2.8	5.0	61	2.6
NDC5433-5	3.9	2.9	3.4	5.3	61	1.8
Atlantic	1.8	2.0	1.9	5.6	89	4.4
Chipeta	4.3	3.7	4.0	3.3	96	4.2

<sup>1</sup>Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

<sup>2</sup>Tubers were stored at 45°F for 97 days.

<sup>3</sup>Days from harvest to first visible growth. Tubers were stored at 45°F.

<sup>4</sup>Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

**Colorado Table 7.** Chip color<sup>1</sup> after various storage regimes and specific gravity for Advanced and Western Regional Chip Trial clones - 1999.

Clone	Specific Gravity	5 wks 40°F	5 wks/40°F +3 wks/60°F	5 wks 50°F	5 wks/50°F +3 wks/60°F
AC87340-2	1.094	3.5	3.0	2.0	1.5
AC89653-3	1.096	3.5	3.5	2.5	2.5
AC93377-5	1.098	2.5	1.0	1.5	1.0
AC93395-5	1.095	3.0	3.5	2.5	1.0
AC93400-2	1.082	4.5	4.0	3.0	2.5
AF875-15	1.094	4.0	4.0	2.5	2.5
ATX85404-8	1.107	3.5	3.0	2.5	2.0
BC0894-2	1.086	3.5	3.0	2.5	2.0
CO92059-8	1.091	4.0	4.5	2.5	1.5
ND2676-10	1.091	2.5	2.5	2.0	1.0
NDC5118-2	1.094	3.5	3.0	2.0	2.0
NDC5433-5	1.090	3.5	3.0	2.5	2.0
Atlantic	1.104	4.0	3.5	2.5	2.5
Chipeta	1.092	4.5	4.5	3.0	2.0

<sup>1</sup> Chip color was rated using the Snack Food Association 1-5 scale. Ratings of  $\leq 2.0$  are acceptable.

Colorado Table 8. Yield, grade, tuber shape, and skin type for Advanced and Western Regional Red/Specialty Trial clones - 1999.

Clone	Yield (Cwt/A)					Tuber Shape & Skin Type <sup>1</sup>
	Total	US #1			<4 oz	
		Total	%	>10 oz		
AC93459-1	426	304	70.9	41	112	R,R
CO86218-2	444	339	76.4	45	85	R,R
CO89097-2	463	352	75.6	71	98	Ov,R
CO93037-6	564	344	59.9	30	208	R,R
DT6063-1R	465	374	80.3	93	73	Ov,R
NDC4069-4R/R	431	171	39.1	6	260	R,R
NDC4655-1	338	214	62.6	24	116	Ov,R
NDC5281-2	406	115	28.4	0	289	R,R
NDTX4271-5R	418	339	81.2	40	73	R,R
W8497R	309	8	2.7	0	300	R,R
Norland-DR	489	351	71.6	50	127	R,R
Red LaSoda	491	366	73.9	97	61	R,R
Sangre-S10	510	421	82.2	119	68	R,R
Mean	443	284	61.9	47	144	-----
LSD <sup>2</sup> (0.05)	51	68	8.7	35	28	-----

<sup>1</sup>Tuber shape & skin type: R=round; Ov=oval; R=red.

<sup>2</sup>LSD=least significant difference.

**Colorado Table 9.** Blackspot, storage weight loss, dormancy, and enzymatic browning evaluations for Advanced and Western Regional Red/Specialty Trial clones - 1999.

Clone	Blackspot Index <sup>1</sup>			%	Dormancy (Days) <sup>3</sup>	Enzymatic Browning <sup>4</sup>
	Bud End	Stem End	Average	Weight Loss <sup>2</sup>		
AC93459-1	3.9	4.4	4.2	3.8	68	3.6
CO86218-2	4.8	4.9	4.9	4.4	75	1.6
CO89097-2	4.4	4.7	4.6	5.6	68	3.4
CO93037-6	3.9	3.4	3.7	5.3	103	3.6
DT6063-1R	4.6	4.6	4.6	5.4	75	4.2
NDC4069-4	2.1	1.9	2.0	8.9	75	---
NDC4655-1	3.8	3.7	3.8	9.4	75	2.2
NDC5281-2	3.9	3.3	3.6	7.7	82	1.0
NDTX4271-5R	3.2	3.9	3.6	5.9	75	1.6
W8497R	1.4	1.5	1.5	6.1	75	2.6
Norland-DR	3.8	4.3	4.1	5.7	75	2.8
Red LaSoda	2.2	3.0	2.6	5.1	75	1.6
Sangre-S10	4.1	3.6	3.8	3.5	89	3.6

<sup>1</sup>Blackspot was rated on a 1 to 5 scale, with 5 indicating no discoloration.

<sup>2</sup>Tubers were stored at 45°F for 97 days.

<sup>3</sup>Days from harvest to first visible growth. Tubers were stored at 45°F.

<sup>4</sup>Degree of darkening rated at 60 minutes after slicing fresh lengthwise. Rated on a 1 to 5 scale, with 5 indicating no discoloration.

**Colorado Table 10.** Summary comparison of advanced selections and named cultivars for yield, grade, maturity, specific gravity, and grade defects - 1999. Advanced selections to be released in 2000 for grower evaluations are highlighted.

Clone	Usage <sup>1</sup>	Loc x Years	Total Yield (Cwt/A)	% US #1	Vine Maturity <sup>2</sup>	Specific Gravity	% External Defects <sup>3</sup>	% Hollow Heart <sup>4</sup>
<i>Russets</i>								
AC83064-1	FM	11	465	88.6	3.2	1.078	1.6	0.0
AC83064-6	FM/Fry	11	391	85.5	3.0	1.080	1.6	0.2
CO85026-4	FM	9	368	88.6	3.6	1.084	3.8	0.0
AC87084-3	FM/Fry	7	508	88.6	3.5	1.094	3.0	0.0
AC87079-3	FM	5	425	80.9	2.8	1.091	1.7	1.4
AC87138-4	FM/Fry	5	491	76.6	3.2	1.088	3.9	0.5
AC89536-5	FM	4	521	83.0	3.1	1.084	3.3	0.0
Centennial Russet	FM	28	294	77.2	3.0	1.079	0.6	0.2
Russet Norkotah	FM	25	339	84.4	1.7	1.075	1.7	0.2
Russet Nugget	FM/Fry	29	413	81.8	3.8	1.093	1.5	0.1
<i>Chippers</i>								
BC0894-2	Chip	6	399	85.4	2.4	1.081	1.1	0.0
AC87340-2	Chip	5	474	77.9	3.3	1.084	0.9	0.3
AC89653-3	Chip	4	524	76.6	3.1	1.091	0.6	0.1
Atlantic	Chip	11	425	88.0	3.3	1.098	2.3	5.1
Chipeta	Chip	14	487	82.7	3.4	1.092	4.9	0.3
<i>Reds</i>								
CO86218-2	FM	7	404	82.6	3.1	1.076	1.9	0.0
DT6063-1R	FM	6	462	86.6	2.9	1.082	3.1	0.3
CO89097-2	FM	5	499	82.4	2.9	1.081	2.4	0.2
Sangre	FM	11	423	83.9	2.6	1.074	0.7	0.1

<sup>1</sup>FM=fresh market; Fry=french fry; FM/Fry indicates a dual purpose clone.

<sup>2</sup>Vine maturity: 1=very early; 2=early; 3=medium; 4=late; 5=very late.

<sup>3</sup>Includes defects such as misshapen, second growth, growth crack, and green.

<sup>4</sup>Based on tubers greater than 10 ounces.



Florida

J. M. White and D. P. Weingartner

U of Florida, MREC-Apopka and REC-Hastings

Introduction: Potato variety trials were conducted at the REC-Hastings farm to evaluate varieties for chipping, fresh market, speciality markets, and resistance to corky ringspot and late blight. There were 138 entries, including standards in six tests. Twenty round white and four red-skinned varieties and lines were evaluated as part of the NE-184 Regional Project for chipping and fresh markets.

Methods: Single-row plots, 15 feet long with three foot breaks, were utilized for the NE-184 trial. Twenty-two seed pieces were hand spaced at 8-inch intervals. A randomized complete block design and four replications were used. A summer cover crop of sudax-sudan grass was chopped and then disked several times. Fumigation using 6.0 gallons per acre of Telone II, Lexon DF at 1.25 pounds per acre, seepage irrigation, 1200 pounds per acre 14-2-12 fertilizer, and 20 pounds per acre of Temik 15G at planting were other standard cultural practices used to grow potatoes. The planting date was February 11 and plots were harvested 110 days later on June 1, 1999. A side-dressing of 700 pounds per acre of 14-2-12 was made when the plants were between 4 to 6 inches high. Nine applications of fungicides and two applications of Dipel (insecticide) were applied from April 2 through May 12. Harvesting, washing, and sizing were done by machine, with pick-outs and grading done by hand.

Results: Plant growth was generally very vigorous due to warm temperatures and irrigation. Yields were considered high. High levels of late blight infection were observed, but were controlled with the spray program. Plant stand equaled or exceeded 93%.



**Florida Table 1.** Marketable yield, percentage of yield by grade size distribution, and specific gravity for potato varieties grown at Hastings, FL, 1999.

Clone	Yield (cwt/A) No. 1 <sup>z</sup>	% Size distribution						Specific gravity
		No. 1	B	1 7/8-2 1/2"	2 1/2-3"	>3"	Culls	
Snowden	419	93	4	76	17	0	3	1.0678
NY101	410	89	6	75	14	0	5	1.0630
Atlantic (std.)	394	90	3	65	24	1	7	1.0705
Katahdin	382	85	3	59	25	1	12	1.0575
NY115	377	86	5	74	11	1	9	1.0590
Itasca	376	90	4	84	6	0	6	1.0570
AF1615-1	373	89	6	79	10	0	5	1.0600
Chieftain	370	90	3	76	14	0	7	1.0545
NY112	368	89	3	61	26	2	8	1.0590
AO82611-7	366	89	7	87	2	0	4	1.0660
NY103	362	88	2	54	34	0	10	1.0605
Sebago	358	88	3	58	30	0	9	1.0563
NorDonna	358	87	6	77	10	0	7	1.0573
Kennebec	352	91	2	69	21	1	7	1.0595
BO766-3	335	92	2	51	39	2	6	1.0660
COO83008-1	320	93	1	73	20	0	6	1.0558
W1099Rus	315	92	4	84	7	1	4	1.0518
Russet Norkotah #8	313	92	5	69	19	4	3	1.0530
Norland Dark Red	299	88	4	82	6	0	8	1.0563
AF1437-1	297	87	3	65	22	0	10	1.0498
Yukon Gold	294	88	5	67	21	0	7	1.0640
Shepody	294	84	6	74	10	0	10	1.0668
Superior	285	91	6	89	2	0	3	1.0685
Russet Norkotah #3	267	89	4	68	17	4	7	1.0500
MaineChip	193	86	11	84	2	0	3	1.0790
A8495-1	172	73	22	69	4	0	5	1.0548
Duncan LSD	52							0.004

<sup>z</sup>No. 1 consists of sizes 1 7/8 to >3" of marketable quality.

**Florida Table 2.** External potato tuber data<sup>1</sup> and internal defects for potato varieties grown at Hastings, FL, 1999.

Clone	Tuber data				Internal defects (no./40 tubers)				
	Color	Texture	Shape	Depth	Appear	Hollow heart	Internal necrosis	Corky ringspot	Brown rot
Snowden	7	6	2	4	7	0 c	0 a	0 a	0 a
NY101	6	7	3	6	6	0 c	0 a	0 a	0 a
Atlantic	6	4	3	6	4	7 a	1 a	0 a	0 a
Katahdin	8	7	2	5	7	2 bc	1 a	1 a	0 a
NY115	8	8	2	4	6	0 c	0 a	0 a	0 a
Itasca	8	8	5	6	5	0 c	0 a	0 a	0 a
AF15-16-1	7	7	2	6	7	0 c	0 a	0 a	0 a
Chieftan	2	8	4	3	3	0 c	0 a	0 a	0 a
NY 112	6	6	3	4	5	0 c	1 a	1 a	0 a
AO82611-7	6	5	5	6	5	0 c	1 a	0 a	0 a
NY103	8	8	4	6	6	0 c	0 a	0 a	0 a
Sebago	8	8	4	5	6	3 bc	1 a	0 a	0 a
NorDonna	2	8	3	1	6	0 c	0 a	0 a	0 a
Kennebec	8	8	4	5	4	0 c	0 a	0 a	0 a
BO766-3	6	5	2	4	4	0 c	0 a	0 a	0 a
COO83008-1	5	5	6	5	3	0 c	0 a	0 a	0 a
W1099 Rus	4	2	6	6	6	0 c	0 a	0 a	0 a
Russett Norkotah #8	5	3	6	4	1	0 c	0 a	0 a	0 a
Norland Dark Red	2	8	2	3	5	0 c	0 a	0 a	0 a
AF1437-1	7	7	4	5	6	0 c	0 a	0 a	0 a
Yukon Gold	7	5	2	6	6	0 c	0 a	0 a	0 a
Shepody	8	8	5	7	6	0 c	0 a	1 a	0 a

<sup>1</sup> See NE-184 rating scale.

## Idaho

S. Love, R. Novy, D. Corsini, P. Bain, L. Later, J. Stimpson, and A. Mosley

Evaluations on breeding selections in 1999 included variety trials, herbicide screening, culinary tests, and disease screening. Market types included in the evaluations were long russets (or white processing types), chippers, and reds.

### Variety Releases

Bannock Russet (A81473-2), a cross of A75175-1 and A75188-3, was released in 1999. Release for IdaRose (A82705-1R), a cross of Sangre and TXA218-7, and Gem Russet (A8495-1), a cross of A77182-1 and Russet Norkotah, are being applied for and should be completed in 2000.

Release procedures have begun for two additional varieties. NDO1496-1 (yet to be named), a cross of ND292-1 and A77268-1, is a cold chipper. A82360-7 (yet to be named), a cross of A77182-1 and A75188-3, is a high dry matter clone.

### Replicated Variety Trials

Nine potato variety trials were conducted in 1999 in farmers' fields at Rexburg and Shelley, and Experiment Station sites at Aberdeen, Kimberly and Parma, Idaho (Tables 1-9). Rexburg is located in the high elevation area of eastern Idaho and has the coolest, shortest season (120 days between potato planting and harvest) of the four sites. Shelley and Aberdeen are located along the Snake River in Eastern Idaho, are slightly warmer and have a growing season of approximately 130 days. Kimberly is located in South-central Idaho and has a 140-day growing season for potatoes. Parma is located in the warmer area of Western Idaho and has a 160-day season. All trial sites were located within major potato producing areas.

The trials were planted between April 26 and May 17 and harvested between September 23 and October 12. Crop management practices were typical of those used in the region in which the trial was located. All trials were planted using a randomized complete block design with either four or six replications. Plots consisted of single rows, twenty feet long.

Following harvest, tubers were weighed, graded, and sampled for internal quality evaluations.

Depending on the specific objectives of the trial, samples were taken for evaluation of blackspot and shatter bruise susceptibility, presence of internal defects, specific gravity, french fry color, and dry-matter yield.

The 1999 growing season was typified by a cold, wet May and June that caused slow emergence and delayed early growth. This was accompanied by a late June frost, which further hampered early growth. The remainder of the growing season was warm and abnormally dry with about one-third inch of rainfall through harvest. In general, tuber quality in the trials was very good. However, due to delayed growth, yields were moderate and tuber size small.

Five of the nine trials were conducted to evaluate dual purpose russet or long-white, processing selections (Tables 1-5). Two were conducted to evaluate chipping selections (Tables 6,7), and two to evaluate selections for high dry-matter yield with intent to identify clones superior for dehydration purposes (Tables 8,9).

The trials grown in Rexburg and Shelley included new varieties and the most advanced russet breeding selections from the Aberdeen program (Tables 1,2). In both trials, Russet Norkotah was the lowest yielding clone and Russet Burbank was the second lowest. Several clones produced high total and U.S. No. 1 yields, including Ranger Russet, A82360-7, A9014-2, A9045-7, and Bannock Russet. Specific gravity was acceptably high for all clones, except Russet Norkotah, in both trials. The best post-storage fry scores were exhibited by A84118-3, A82360-7, A9014-2 (this clone had exceptional color), and Gem Russet. A9014-2 and A84118-3 had some hollow heart in both trials.

The Tri-state trial represents the stage of evaluation beyond the advanced yield trials and includes locations in Oregon and Washington. In the Idaho location of this trial, all but one selection had yields similar to or higher than Russet Burbank. AO90014-1 had good specific gravity and exceptional fry color, but also had low yield and small tubers. A90586-11, a late blight resistant clone with long white tubers, showed good yield and quality but had blackspot susceptibility similar to

Ranger Russet. A89219-7 had the highest yield of all entries in the trial, but had tubers with poor shape and appearance.

Advanced russet selections, including ten selections in their fifth to ninth year of evaluation, were grown at Aberdeen and Kimberly (Tables 4,5). Overall, the best performers at both locations were A89384-10, A9014-2, A9045-7, and A92303-7. A9014-2 and A92303-7 produced french fries with acceptable color following storage at 40°F.

In the Idaho location of the Western Regional chipping trial Chipeta, one of the check varieties, had the highest yield (Table 6). AC87430-3, A90467-14, and AKM94026-7 had excellent chip color and high tuber solids. A90467-14 had an amount of hollow heart similar to Atlantic.

In the advanced selection chipping trial two clones, A91790-13 and ATX85404-8W, had good combinations of yield, size, specific gravity, and chip color (Table 7). A91790-13 showed exceptional potential as a cold chipper.

In the high dry-matter trials A82360-7 had the highest dry matter yield at Aberdeen and A91814-5 had the highest at Kimberly (Tables 8,9). A91814-5 also produced exceptional fry color after storage. All but one clone at Aberdeen had higher dry matter yield than Russet Burbank. The superior dry matter yields were the result of a combination of high tuber yield and high tuber solids.

### Sensory Evaluations

Five advanced breeding selections were compared to Russet Burbank in blind sensory evaluations of baked tubers. The evaluations were conducted at the Bingham County Extension Office by University of Idaho home economists. Tubers were baked in a convection oven and rated by trained panelists for color, texture, flavor, and overall quality. The evaluations were completed twice, once within a month of harvest and again after five months of storage at 40°F.

In the fall evaluation A8893-1 and A90586-11 were rated significantly lower for flavor and overall appeal than was Russet Burbank. (Table 10). A90586-11 was also rated lower for color. In the spring evaluation A8893-1, A9045-7, and A90586-11 were rated lower than Russet Burbank for color

but were similar for all other characteristics. Generally, the unreleased selections appeared to be similar to Russet Burbank for baked quality. There was less variation in scores in the 1999 test than for any test in the past.

### Metribuzin Screening

Twelve varieties and twenty-eight breeding selections (mainly those entered into northwest and western regional variety trials) were tested for response to the herbicide metribuzin (Sencor®/Lexone®). Estimations were made for percent foliar injury and measurements taken for vigor following a postemergence (8-10 inch plants) application of metribuzin at the rate of 1.0 lb a.i./A. This rate is slightly above the highest allowable rate. Yield loss for each clone as a result of the application was predicted using a model that incorporates injury and vigor as inputs. Each variety or selection was assigned a relative resistance score based on yield loss in comparison with varieties of known response.

Environmental conditions at the time of application were favorable for injury. As a result, the level of injury was the highest ever observed. Varieties such as Russet Burbank and Red LaSoda, that are normally resistant and moderately susceptible, respectively, expressed symptoms classified as moderately susceptible and very susceptible (Table 11). Varieties that normally express severe symptoms, such as Shepody, were completely killed.

In spite of the severe injury present in the trial, most of the russet and long-white selections were moderately resistant to very resistant to injury. One exception was the selection AC87084-3 from Colorado, which showed 100% yield loss due to injury.

The chipping and round white selections showed a mixed response. Chipeta and A90467-14 were very resistant to injury. Other chipping selections were moderately susceptible.

Of the red clones, A79543-4R, AO92657-3R, CO89097-2, NDC4655-1R, and NDO4592-3R were susceptible or very susceptible to injury. In general, the red class of clones was most susceptible to injury.



## Late Blight Screening

Arrangements were made with Al Mosley to screen breeding material for late blight resistance in Corvallis, Oregon. Artificial inoculations were used to augment natural infection. Disease response was measured as a rating value that represented the percentage of defoliation. In addition, the amount of tuber rot before and after storage was documented.

A wide range of responses to late blight was found among the clones screened (Table 12). The selection with the highest resistance to foliar blight was A90586-11. Other selections that showed some resistance were AO91812-1, A88338-1, and AO92017-6. Tuber infection was generally not very severe. Clones which showed a significant amount of tuber rot included A89219-7, AO87277-6, Shepody, Dark Red Norland, Red LaSoda, AO91812-1, and AO92378-1. Because of a late onset of severe symptoms in the trial, the late maturing clones tended to have the greatest amount of tuber rot.

## Summary of Promising Breeding Selections

Bannock Russet: The experimental designation for this variety was A81473-2. It was released in 1999. It is an oblong russet with a very late and disease resistant vine. It is the result of a cross between A75175-1 (Targhee x A67490-3) and A75188-3. A81473-2 was grown at Rexburg and Shelley in 1999 (Tables 1,2,3). In each case, it performed very well for yield and quality in comparison with Russet Burbank. In the sensory evaluation Bannock Russet produced baked potatoes that were indistinguishable from those of Russet Burbank (Table 10).

A82360-7: This oval, lightly russetted clone was developed specifically for dehydration purposes and selected for maximum dry matter yield. It is the result of a cross between A77182-1 (Atlantic x Lemhi Russet) and A75188-3. A82360-7 has shown potential for french fry production as well as dehydration, although its short shape may limit its potential for this market. It was the highest yielding clone in Shelley (Table 2). In the high dry-matter trials at Aberdeen and Kimberly, it produced the highest dry matter yield in Aberdeen (Table 8). Baked potato quality for A82360-7 was identical to that for Russet Burbank (Table 10).

A82705-1R: This dark red clone will be released as IdaRose in 2000. It is high yielding and has good storage characteristics. It is one of the few selections tested that competes for yield in Idaho with Red LaSoda. It is the result of a cross between Sangre and TXA218-7 (NDTX9580-6R x Viking). It was not included in the reported trials in 1999. It is currently being evaluated in commercial production situations.

A8495-1: This clone is currently being released as Gem Russet. It has long tubers that are moderately russetted and is very similar in appearance to Russet Norkotah. It is the result of a cross between A77182-1 (Atlantic x Lemhi Russet) and Russet Norkotah. In 1998 it was included in trials at Rexburg and Shelley (Tables 1,2). In these trials it outperformed Russet Burbank in nearly every yield and quality category. It produced very good fry color following cold storage. Gem Russet is a PVY carrier, similar to its male parent.

A84118-3: This long, russet clone is the result of a cross between A77236-6 and TND329-1Russ. It has excellent tuber type and appearance. In past years it has produced only moderate yields, but a high percentage of marketable tubers. In 1999, it was included in the Rexburg and Shelley trials (Tables 1,2). In each case, it outyielded Russet Burbank and produced tubers with high specific gravity and good fry color. It had some hollow heart in both trials. In past years this clone has shown moderate levels of resistance to foliar late blight, and high levels of resistance to tuber blight.

A90586-11: This clone came out of the late blight resistance breeding efforts. It is a cross between the Polish seedling KSA195-90 (PG-429 x Duet) and Ranger Russet. It has a long shape and white skin. In 1999 it was grown in trials at Rexburg, Shelley, and Aberdeen (Tables 1,2,3). It showed excellent yield potential and high specific gravity. Its fry colors were similar to those of Russet Burbank. It was similar to Ranger Russet in susceptibility to blackspot bruise. In the Corvallis late blight tests, it was the best clone for resistance to foliar late blight (Table 12).

NDO1496-1: This round, white chipping clone is an Oregon selection of a North Dakota seedling. It is the result of a cross between ND292-1 and A77268-1 (Lemhi Russet x Norchip). Due to susceptibility to shatter bruise, Oregon researchers dropped NDO1496-1, and it is now being evaluated

by the Idaho industry. In 1999, it was grown in one trial at Aberdeen where it had slightly below average yield (Table 7). Chip color was better than any of the standard varieties and was the best in the trial after long-term storage at 40°F. NDO1496-1 has shown the ability to chip acceptably from cold storage and to recondition well. It has performed well in processor trials and will likely be released in 2000 or 2001.

A8893-1: This is a medium to early maturing selection with oblong, russet tubers. It resulted from a cross of A7816-14 and NorKing Russet. It was selected at the Parma research station for its ability to produce good early yields and maintain adequate processing quality under stress conditions. In 1999, it was grown in trials at Shelley and Rexburg (Tables 1,2). It out-performed the check varieties in nearly all yield and quality parameters. It showed some tendency for hollow heart at both locations. Its fry color was similar to that of the check varieties. In the baked potato evaluations it was largely indistinguishable from Russet Burbank (Table 10).

A9014-2: This selection is medium maturing with heavy russet skin and oblong shape. It is the result of a cross between Gem Russet and A8341-5. It has shown the ability to produce tubers with excellent appearance. A9014-2 has high specific gravity and is one of the best selections to date for fry color from 40° F storage. In 1999, it was grown in trials at Rexburg, Shelley, Aberdeen, and Kimberly (Tables 1,2,4,5). It performed very well in all locations compared to the standard varieties. It showed some susceptibility to hollow heart at Rexburg and Shelley.

A9045-7: This selection is medium maturing with long tuber type and light to medium russet skin. It resulted from a cross of Ranger Russet and Russet Legend. It was selected at Parma for early yield and good processing quality under stress conditions. In past years it has shown good resistance to sugar ends. In 1999, it was grown in trials at Rexburg, Shelley, Aberdeen, and Kimberly (Tables 1,2,3,4,5). Overall, it had similar yields to the check varieties. It also showed excellent resistance to all internal defects with the exception of blackspot bruise. In the baked potato sensory evaluation it was generally similar to Russet Burbank (Table 10).



IDAHO TABLE 1. Performance of russet potato selections on the farm of Gary Summers at Rexburg, Idaho, in 1999.

Clone	Total Yield	U.S. No. 1's		Culls &		Specific Gravity	Hollow Heart/ <sup>1</sup> Brown Center		Blackspot <sup>2</sup> Bruise	Shatter <sup>3</sup> Bruise	Fry 40 <sup>4</sup> Color	Fry 45 <sup>4</sup> Color
		Yield	%	> 12 oz.	6 to 12 oz.		%	Brown Center				
		----cwt/acre----	-----%-----	-----%-----	-----%-----		----	----				
RUSSET BURBANK	287	179	62	8	37	19	18	1.082	2.9	3.2	3.9	1.7
RANGER RUSSET	356	245	69	11	40	12	0	1.085	3.8	2.7	4.0	1.8
RUSSET NORKOTAH	182	118	65	4	34	31	8	1.070	3.1	2.2	4.0	2.2
A82360-7	339	236	70	6	41	23	0	1.085	2.3	3.1	3.2	0.9
A84118-3	291	217	75	5	34	24	12	1.087	1.4	3.3	3.3	1.4
A8893-1	365	297	81	21	43	10	16	1.087	2.9	2.7	3.6	1.2
A9045-7	359	318	89	9	54	9	0	1.089	3.1	2.4	4.0	2.0
A9014-2	375	316	84	23	45	9	18	1.084	2.3	2.8	2.8	0.4
A90586-11	288	144	50	7	26	14	4	1.090	4.4	2.5	4.0	1.7
UMATILLA RUSSET	312	216	69	7	39	25	0	1.088	3.5	3.0	3.8	1.4
GEM RUSSET	312	236	76	4	45	21	2	1.088	3.0	2.7	3.4	0.8
BANNOCK RUSSET	320	267	83	17	52	9	0	1.080	2.0	4.0	3.8	1.4
Mean	316	232	73	10	41	17	6	1.085	2.9	2.9	3.6	1.4
LSD (.05)	38	40						0.004	0.2	0.3	0.2	0.5
LSD (.01)	51	53		13	39	18	5	0.005	0.2	0.4	0.3	0.6

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers >12 oz.<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.<sup>3</sup> Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 2. Performance of russet potato selections on the farm of Reed Searle at Shelley, Idaho, in 1999.

Clone	Total Yield	U.S. No. 1's			Culls &		Specific Gravity	Hollow Heart/ <sup>1</sup>		Blackspot <sup>2</sup> Bruise	Shatter <sup>3</sup> Bruise	Fry 40 <sup>4</sup>		Fry 45 <sup>4</sup>	
		Yield	%	> 12 oz. 6 to 12 oz.	< 4 oz.	U.S. No.2		Brown	Center			Color	Color		
---cwt/acre--- %----- %----- %-----															
RUSSET BURBANK	275	158	57	5	32	24	18	1.081	2	3.3	3.4	3.6	1.2		
RANGER RUSSET	463	327	71	19	38	11	19	1.093	0	4.6	3.2	3.4	0.8		
RUSSET NORKOTAH	235	140	60	3	28	39	1	1.072	0	3.6	2.6	4.0	1.6		
A82360-7	561	376	67	6	40	22	11	1.099	2	2.8	3.3	2.5	0.7		
A84118-3	402	329	82	14	47	13	5	1.102	12	2.4	3.4	2.8	0.5		
A8893-1	366	277	76	16	45	17	7	1.079	12	3.6	2.7	3.5	0.9		
A9045-7	524	414	79	24	41	10	11	1.093	0	3.9	2.7	3.9	1.5		
A9014-2	468	381	81	17	51	11	8	1.090	24	2.9	3.3	2.0	0.3		
A90586-11	416	208	50	9	29	17	33	1.094	4	4.3	2.8	3.8	1.6		
UMATILLA RUSSET	414	246	59	7	32	23	17	1.088	0	4.0	2.7	3.1	1.5		
GEM RUSSET	401	300	75	9	43	20	5	1.088	4	3.7	3.0	3.0	0.5		
BANNOCK RUSSET	446	379	85	32	41	9	7	1.087	4	3.0	4.0	2.8	1.0		
Mean	414	294	70	13	39	18	12	1.089	5	3.5	3.1	3.2	1.0		
LSD (.05)	60	57						0.004		0.3	0.4	0.3	0.2		
LSD (.01)	80	77						0.005		0.4	0.5	0.4	0.3		

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers >12 oz.<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.<sup>3</sup> Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 3. Performance of russet potato selections in the Idaho location of the Tri-State (Idaho, Oregon, Washington) variety trial grown on the Aberdeen Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's				Culls & U.S. No.2		Specific Gravity	Hollow Heart/ <sup>1</sup> Brown Center ----- %	Blackspot <sup>2</sup> Bruise	Shatter <sup>3</sup> Bruise	Fry 40 <sup>4</sup>		Fry 45 <sup>4</sup>	
		Yield	%	> 12 oz.	6 to 12 oz.	< 4 oz.	U.S. No.2					Color	Color		
														----- cwt/acre	
RUSSET BURBANK	503	358	71	7	43	18	11	1.085	16	3.7	3.1	3.9	1.1		
RANGER RUSSET	549	477	87	26	49	7	6	1.095	0	4.7	2.5	3.8	1.3		
A89219-7	613	558	91	56	32	2	7	1.092	3	3.8	2.8	2.8	0.4		
A9045-7	581	544	94	19	62	5	1	1.094	0	4.4	2.2	3.6	1.3		
A90586-11	552	385	70	28	34	9	22	1.096	3	4.7	2.1	4.0	1.3		
AO90014-1	416	360	87	7	51	13	1	1.089	0	2.7	3.2	1.9	0.3		
AO92017-6	500	415	83	24	49	6	11	1.094	0	3.8	2.4	3.3	1.0		
Mean	531	443	83	24	46	8	9	1.092	3	4.0	2.6	3.3	0.9		
LSD (.05)	68	79						0.002		0.5	0.4	0.6	0.3		
LSD (.01)	93	107						0.003		0.7	0.5	0.9	0.4		

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers > 12 oz.

<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.

<sup>3</sup> Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.

<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 4. Performance of advanced yield selections grown at Aberdeen, Idaho, Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No. 2		Specific Gravity	Hollow Heart/ <sup>1</sup> Brown Center		Blacks <sup>2</sup> Bruise	Merit <sup>3</sup> Score	Fry 40 <sup>4</sup>		Fry 45 <sup>4</sup>	
		Yield	%	> 12 oz.	6 to 12 oz. < 4 oz.		%				Color		Color	
	----cwt/acre----						-----%-----							
Lemhi Russet	457	372	81	12	48	17	1	1.097	23	4.9	3.2	2.7	1.2	
Ranger Russet	354	299	85	11	51	10	5	1.093	0	3.7	2.9	3.1	1.6	
Russet Burbank	425	307	72	11	41	21	7	1.088	22	2.7	2.8	2.8	1.0	
A8495-1	393	333	85	13	52	15	1	1.096	13	3.0	2.9	2.9	0.7	
A88338-1	386	357	92	27	54	6	1	1.091	5	1.3	3.0	2.9	1.0	
A89384-10	419	348	83	8	50	16	1	1.088	14	1.7	3.1	2.8	2.0	
A9014-2	420	380	90	13	59	10	0	1.093	3	2.5	4.0	1.3	0.3	
A9045-7	432	390	90	16	61	7	3	1.096	0	3.3	3.6	3.5	2.2	
A91186-2	371	332	89	5	60	8	2	1.086	0	2.3	3.1	1.8	0.5	
A91325-6	363	322	89	7	63	11	0	1.089	18	1.1	2.9	1.4	0.4	
A92303-7	446	398	89	17	54	10	1	1.089	3	2.6	3.4	2.0	1.2	
A9304-3	397	361	91	23	57	5	4	1.095	0	3.4	3.1	2.4	0.7	
A93152-1	260	228	88	23	54	7	5	1.089	0	2.1	2.6	2.4	0.8	
A93160-9	270	254	94	24	57	6	0	1.089	24	2.3	3.0	2.6	1.8	
Mean	416	352	85	16	51	11	4	1.092	7	2.4	2.9	2.5	1.0	
LSD (.05)								0.004		0.5	0.6	0.5	0.6	
LSD (.01)								0.005		0.7	0.8	0.7	0.8	

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers > 12 oz.<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.<sup>3</sup> Merit Score is similar to a breeder's preference rating and based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 5. Performance of advanced yield selections grown at Kimberly, Idaho, Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's			Culls & U.S. No.2	Specific Gravity	Hollow Heart/ <sup>1</sup> Brown Center	Blackspot <sup>2</sup> Bruise	Merit <sup>3</sup> Score	Fry 40 <sup>4</sup> Color	Fry 45 <sup>4</sup> Color
		Yield	%	> 12 oz. 6 to 12 oz.							
	---cwt/acre---		-----%				----				
Lemhi Russet	423	306	72	4	23	1.077	0	3.6	2.8	2.1	0.9
Ranger Russet	451	394	87	32	6	1.091	0	3.6	2.9	2.9	1.5
Russet Burbank	477	310	65	8	16	1.092	0	3.4	2.0	3.0	2.0
A8495-1	438	313	71	4	25	1.085	0	3.0	2.4	1.8	0.6
A88338-1	472	425	90	25	8	1.089	0	3.3	2.7	2.9	1.8
A89384-10	486	393	81	10	11	1.087	0	4.2	3.0	2.2	1.4
A9014-2	473	433	92	17	8	1.081	0	3.2	3.3	0.6	0.4
A9045-7	490	446	91	33	5	1.091	0	2.3	3.6	3.3	1.3
A91186-2	381	328	86	6	13	1.083	0	4.3	3.0	1.4	0.6
A91325-6	504	447	89	13	10	1.085	0	3.8	2.7	1.0	0.4
A92303-7	541	502	93	24	6	1.088	0	3.5	2.9	2.0	1.3
A9304-3	435	374	86	17	7	1.087	0	3.9	2.9	1.8	0.7
A93152-1	373	321	86	32	5	1.082	0	4.8	3.1	1.9	1.2
A93160-9	323	295	91	35	6	1.088	20	4.1	2.8	2.1	1.2
Mean	448	378	84	19	11	1.086	1	3.6	2.9	2.1	1.1
LSD (.05)	83					0.004		0.5	0.6	0.7	0.5
LSD (.01)	111					0.006		0.7	0.8	0.9	0.7

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers >12 oz.<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.<sup>3</sup> Merit Score is similar to a breeder's preference rating and based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 6. Performance of chipping selections in the Idaho location of the Western Regional Chipping Trial grown on the Aberdeen, Idaho, Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No.2	Specific Gravity	Hollow Heart/ <sup>1</sup>		Blackspot <sup>2</sup> Bruise	Shatter <sup>3</sup> Bruise	Chip 40 <sup>4</sup>		Chip 50 <sup>4</sup>		Recon <sup>5</sup> Color
		Yield	%	< 4 oz.		Brown	Center			Color	Color	Color	Color	
	---cwt/acre---		-----%	-----%		---	---							
ATLANTIC	425	342	80	10	50	17	3	1.097	23	2.1	2.8	4.0	1.5	2.7
CHIPETA	597	550	92	23	56	5	3	1.092	0	2.9	2.4	4.0	1.1	2.9
A90467-14	563	488	87	14	52	11	2	1.098	20	2.0	2.5	2.9	1.0	2.0
AC87340-2	477	393	82	9	52	16	1	1.086	0	1.9	2.5	3.0	1.1	2.0
AC89653-3	513	329	64	2	32	34	1	1.089	0	1.9	2.7	3.3	1.4	3.2
AO91812-1	575	491	85	15	53	13	1	1.097	0	2.4	2.0	4.2	1.5	2.9
AKM94026-7	443	334	75	10	40	21	3	1.092	5	2.5	3.0	2.4	1.0	1.7
AKM94031-2	352	207	59	2	23	41	0	1.094	5	3.0	2.1	2.7	1.1	1.8
Mean	493	392	78	11	45	20	2	1.093	7	2.3	2.5	3.3	1.2	2.4
LSD (.05)	53	68						0.003		0.9	0.4	0.5	0.2	0.5
LSD (.01)	72	92						0.005		1.2	0.5	0.6	0.3	0.6

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers >12 oz.

<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.

<sup>3</sup> Shatter bruise measured using a 1-5 scale where 1 = resistant, 5 = susceptible.

<sup>4</sup> Chip color rated using SFA color chart, 0-5 scale with lower score indicating lighter color; potatoes stored at 40° or 50°F.

<sup>5</sup> Tubers stored at 40°F for 7 weeks then reconditioned to 65°F for 3 weeks.



IDAHO TABLE 7. Performance of advanced chipping potato selections grown on the Aberdeen, Idaho, Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's		Culls & U.S. No.2		Specific Gravity	Hollow Heart/ <sup>1</sup> Brown Center	Blackspot <sup>2</sup> Bruise	Merit <sup>3</sup> Score	Dec 45 <sup>4</sup>		Feb 45 <sup>4</sup>		Feb 40 <sup>4</sup>	
		Yield	%	> 12 oz.	4 to 12 oz.					Color	Color	Color	Color	Color	Color
	----cwt/acre---				-----%		-----%								
A88431-1	383	294	77	6	71	22	1	1.105	6	1.9	2.9	2.0	1.2	4.0	4.0
A90467-14	424	272	64	4	60	34	2	1.101	8	2.0	3.4	1.4	1.0	3.1	3.1
A90490-1	481	408	85	12	73	15	0	1.089	9	1.4	3.5	2.1	1.7	4.9	4.9
A91790-13	487	384	79	4	75	21	0	1.090	0	1.8	3.1	1.0	1.0	2.9	2.9
ATX85404-8W	499	422	85	9	76	15	0	1.096	9	2.4	3.4	1.7	1.5	2.6	2.6
NDA2031-2	448	282	63	2	60	37	0	1.089	0	1.4	2.8	1.1	1.4	2.5	2.5
NDO1496-1	406	313	77	11	66	19	4	1.094	0	1.6	2.3	1.1	1.7	4.2	4.2
NorValley	397	280	71	4	67	29	1	1.086	0	2.1	3.6	1.7	1.8	3.6	3.6
Chipeta	427	385	90	12	78	7	3	1.096	0	2.1	3.3	2.0	1.8	4.7	4.7
Gemchip	417	359	86	7	79	14	0	1.090	10	2.7	3.1	3.1	2.7	4.9	4.9
Mean	437	339	78	7	71	21	1	1.094	4	1.9	3.1	1.7	1.6	3.7	3.7
LSD (.05)															
LSD (.01)															

<sup>1</sup> Hollow heart/brown center was measured by cutting tubers > 12 oz.<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.<sup>3</sup> Merit Score is similar to a breeder's preference rating and based on overall appearance and size of field run potatoes, 1-5 scale with 5 = best.<sup>4</sup> Chip color rated using SFA color chart, 0-5 scale with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 8. Performance of advanced high dry matter selections grown on the Aberdeen, Idaho, Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's				Culls & U.S. No.2		Specific Gravity	Hollow <sup>1</sup> Heart	Blackspot <sup>2</sup> Bruise	Dry <sup>3</sup> Matter	Fry 40 <sup>4</sup> Color	Fry 45 <sup>4</sup> Color
		Yield	%	> 12 oz.	6 to 12 oz.	< 4 oz.	U.S. No.2						
----cwt/acre----													
Lemhi Russet	457	372	81	12	48	17	1	1.097	23	4.9	11,051	2.7	1.2
Ranger Russet	354	299	85	11	51	10	5	1.093	0	3.7	8,316	3.1	1.6
Russet Burbank	425	307	72	11	41	21	7	1.088	22	2.7	9,507	2.8	1.0
A82360-7	564	466	83	8	50	16	1	1.091	0	2.2	13,045	2.4	0.7
A8792-1	486	345	71	14	47	6	23	1.098	6	1.9	11,951	3.0	0.8
A9139-1	448	383	86	60	22	2	12	1.094	3	1.6	10,573	2.8	1.6
A91814-5	486	351	72	6	40	27	1	1.095	0	1.8	11,598	1.4	0.2
A92158-3	450	413	92	22	58	7	1	1.084	3	1.3	9,704	3.3	0.9
A92294-6	492	343	70	5	44	17	13	1.097	0	2.8	11,941	2.8	0.9
Mean	462	364	79	17	44	14	7	1.093	6	3	10,854	2.7	1.0
LSD (.05)								0.004				0.5	0.6
LSD (.01)								0.005				0.7	0.8

<sup>1</sup> Hollow heart was measured by cutting tubers > 12 oz.

<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.

<sup>3</sup> Dry matter yield as pounds per acre.

<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 9. Performance of advanced high dry matter selections grown on the Kimberly, Idaho, Experiment Station in 1999.

Clone	Total Yield	U.S. No. 1's			Culls &		Specific Gravity	Hollow <sup>1</sup> Heart	Blackspot <sup>2</sup> Bruise	Dry <sup>3</sup> Matter	Fry 40 <sup>4</sup>		Fry 45 <sup>4</sup> Color
		Yield	%	> 12 oz.	< 4 oz.	U.S. No.2					Color	Color	
	----cwt/acre---							----		lb/A			
Lemhi Russet	423	306	72	4	39	23	5	0	3.6	6,963	2.1	0.9	
Ranger Russet	451	394	87	32	39	6	6	0	3.6	8,630	2.9	1.5	
Russet Burbank	477	310	65	8	37	16	19	0	3.4	9,261	3.0	2.0	
A82360-7	539	395	73	3	41	26	1	0	3.6	10,274	1.4	0.5	
A8792-1	526	427	81	28	43	4	14	3	3.5	10,805	2.0	0.7	
A9139-1	550	432	79	44	30	3	18	0	2.5	9,454	2.4	1.6	
A91814-5	589	438	74	4	40	23	3	0	3.2	11,725	0.3	0.1	
A92158-3	491	450	92	24	52	6	2	5	3.8	9,144	2.6	1.2	
A92294-6	555	432	78	4	43	17	5	0	3.7	10,357	1.8	0.6	
Mean	511	398	78	17	41	14	8	1.4	3	9,624	2.1	1.0	
LSD (.05)	83										0.7	0.5	
LSD (.01)	111										0.9	0.7	

<sup>1</sup> Hollow heart was measured by cutting tubers > 12 oz.<sup>2</sup> Blackspot bruise measured using the abrasive peel method, 1-5 scale where 1 = resistant, 5 = susceptible.<sup>3</sup> Dry matter yield as pounds per acre.<sup>4</sup> USDA fry grade score with lower score indicating lighter color; potatoes stored at 40° or 45°F.

IDAHO TABLE 10. Sensory evaluations of baked potatoes from breeding selections grown at Aberdeen, Idaho, in 1999.<sup>1</sup>

Clone	At Harvest			Overall	After 5 Months of Storage (40° F)			
	Color	Texture	Flavor		Color	Texture	Flavor	Overall
Russet Burbank	7.1 ab	6.6 a	6.4 ab	6.6 a	6.9 a	6.4 a	6.2 a	6.3 a
Bannock Russet	7.2 a	6.3 a	6.4 ab	6.4 ab	6.7 ab	6.2 a	6.1 a	6.1 a
A82360-7	7.2 a	6.4 a	6.6 a	6.6 a	6.8 ab	6.2 a	6.3 a	6.2 a
A8893-1	7.0 ab	6.3 a	6.2 b	6.2 b	6.6 b	6.0 a	6.2 a	6.2 a
A0945-7	6.9 bc	6.6 a	6.6 a	6.6 a	6.6 b	6.3 a	6.2 a	6.3 a
A90586-11	6.7 c	6.3 a	6.2 b	6.3 b	6.6 b	6.1 a	6.1 a	6.1 a

<sup>1</sup> Evaluations were made by trained panelists using double blind procedures. Approximately 100 tests were done on each clone.

Each baked potato was rated for color, texture, flavor, and overall appeal. Ratings were made using a 1-9 scale with 9 = best.

Means were separated using Duncan's Multiple Range Test, and means followed by the same letter are not significantly different.

IDAHO TABLE 11. Reaction of potato clones to the herbicide metribuzin (Sencor/Lexone) in 1999.

Clone	Plant Injury <sup>2</sup> 21 Days Following Application	Predicted <sup>3</sup> Yield Reduction Due to Injury <sup>2</sup>	Relative <sup>4</sup> Suceptibility to Injury
-----%-----			
<u>Russet and Long Whites</u>			
Russet Burbank	73	60	MS
Bannock Russet	18	2	R
Gem Russet	50	30	MS
Russet Norkotah	25	8	MR
Shepody	100	100	VS
Umatilla	23	6	MR
Yukon Gold	25	4	R
A88338-1	28	8	MR
A8893-1	15	0	VR
A9014-2	45	25	MS
AC87097-3	38	19	MR
AC87084-3	100	100	VS
AC87138-4	10	0	VR
AO87277-6	25	7	MR
CO89036-10	10	0	VR
NDD840-1	25	5	R
A89219-7	35	15	MR
A9045-7	8	0	VR
A90586-11	15	1	R
AO90014-1	25	10	MR
AO92017-6	8	0	VR
A82360-7	20	4	R
A84118-3	30	15	MR
<u>Chippers and Round Whites</u>			
Atlantic	97	91	S
Chipeta	8	0	VR
A90467-14	3	0	VR
AC87340-2	50	26	MS
AC89653-3	45	24	MS
AO91812-1	55	34	MS
<u>Reds</u>			
Dark Red Norland	25	7	MR
Red LaSoda	75	100	VS
IdaRose	65	47	MS
A79543-4R	88	73	S
AO92657-3R	99	100	VS
CO89097-2	82	74	S
NDC4655-1	99	100	VS
NDO2686-4R	55	45	MS
NDO4300-1R	35	15	MR
NDO4588-5R	25	8	MR
NDO4592-3R	85	100	VS

<sup>1</sup> Metribuzin applied postemergence (8-12 inch plants) at a rate of 1.0 lb a.i./A (17.5gpa, 30 psi).

<sup>2</sup> Plant injury was recorded as the percentage of foliage from average plant in each plot that showed typical metribuzin symptoms (chlorosis, necrosis, vein clearing, etc.)

<sup>3</sup> Predicted yield reduction is expressed as percent loss compared to untreated plots and was calculated using the following equation: Yield reduction =  $[1 - (1.142 + 0.176 (\log (\text{plant height treated}/\text{plant height untreated})) - 0.00796 (\text{plant injury}))] \times 100$ .

<sup>4</sup> VR=very resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible, VS=very susceptible.

IDAHO TABLE 12. Response to late blight pressure at Corvallis, Oregon, 1999.

Entry	Foliar Rating <sup>1</sup>	% Tuber Infection <sup>2</sup>	% Tuber Decay <sup>3</sup>
A90586-11	1.5	0.0	10.0
A88338-1	2.2	5.0	5.0
AO91812-1	2.5	10.0	20.0
AO92017-6	2.7	20.0	0.0
A9045-7	3.0	0.0	0.0
AO92252-1	3.0	0.0	0.0
Ranger R.	3.2	2.5	10.0
AO93317-5	3.5	0.0	10.0
AO92378-1	3.7	5.0	15.0
AC87084-3	4.0	0.0	5.0
Umatilla R.	4.0	0.0	0.0
R. Burbank	4.2	7.5	0.0
A90467-14	4.5	7.5	0.0
AO87277-6	4.5	2.5	20.0
Legend R.	4.5	0.0	5.0
A9014-2	5.0	0.0	5.0
AO90014-1	5.0	5.0	10.0
AO92007-2	5.0	0.0	0.0
AO90319-1	5.2	0.0	0.0
A89219-7	5.5	2.5	25.0
AO85165-1	5.5	5.0	5.0
TXN102	6.0	0.0	0.0
TXN296	6.2	0.0	0.0
Atlantic	6.5	0.0	0.0
COO93031-1	6.5	2.5	5.0
CO89097-2	6.7	12.5	0.0
PORTGS124-1	6.7	7.5	20.0
PORTGS129-1	6.7	10.0	0.0
Dk. R. Norland	7.0	5.0	15.0
Shepody	7.0	2.5	15.0
AC87340-2	7.2	2.5	10.0
Red LaSoda	7.2	2.5	15.0
NDO4588-5	7.5	2.5	5.0
R. Norkotah	7.5	2.5	5.0
Yukon Gold	7.5	2.5	0.0
A8893-1	7.7	10.0	10.0
NDO4592-3	8.0	10.0	5.0
NDO2438-6	8.2	2.5	5.0
NDO2686-6	8.2	0.0	5.0
PORTGNP3-138	8.2	2.5	0.0
NDO4300-1	8.5	0.0	10.0
AO92657-3	9.0	5.0	0.0
Mean	5.6	3.7	6.4

<sup>1</sup> Ratings are percent leaf surface infected with late blight (1 = 0%, 5 = 50% 9 = 90-100% injury).

<sup>2</sup> Percent of late blight infected tubers based on 10 randomly selected tubers.

<sup>3</sup> Percent tuber decay based on 10 tubers after one month of storage at room temperature.



## Maine

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**Introduction:** Potato variety trials were conducted at three locations in Maine as part of the NE184 Regional Project (Development of New Potato Clones for Environmental and Economic Sustainability in the Northeast). Thirty-five potato varieties and clones were tested at Aroostook Research Farm, Presque Isle, Maine. Seventeen NE184 varieties and lines were tested on a commercial farm in Exeter (central Maine), while thirty-four varieties and lines were tested on a commercial farm in St. Agatha (northern Maine). Additional trials of advanced selections (pre-regional trial entries) from the USDA-ARS program in Beltsville and the Maine Potato Breeding Program were conducted at the two commercial locations. The primary objective of all of the Maine trials is to determine performance, quality, and storage characteristics of promising potato clones and new varieties in Maine.

**Methods:** Single-row plots, 25 feet long, were utilized for the NE184 trials. Single-row plots, 20 feet long, were utilized for the advanced selection trials. All trials were hand planted using randomized complete block designs and four replications. The seedpiece spacing used for each line is listed in subsequent tables. Details of important management practices are presented in Maine Table 1. At the Presque Isle site the varieties were grouped so that separate tests could be vinekilled and harvested based on maturity classification. Remaining cultural practices were similar to those used on commercial farms in the area. Plant and tuber ratings were conducted using the standard NE184 regional project rating codes (please see Eastern Regional Trial report). Specific gravity was determined at harvest using the weight-in-air/weight-in-water method. Hollow heart ratings indicate the number of hollow tubers observed per 40 large tubers examined. Unless noted otherwise chip color evaluations were conducted during December following storage at 50°F. Chips were fried at 350°F for three minutes and evaluated using an Agtron M35, calibrated with the black "0" disk = 0 and the white "90" disk = 90. Chips were crushed and

reported values are means from four replicates per variety. Each sample was read three times with thorough mixing between readings.

## Results:

### Rainfall, General Growth, and Plant Stands.

Rainfall by month and location is listed in Maine Table 2. The Exeter site had low rainfall during July and August. Irrigation was applied to compensate for this. All sites experienced several weeks without rainfall during July and August. Only the Exeter site had been harvested before heavy rains hit all three sites in mid-September. Plant growth was generally very vigorous at all three sites. Slight to moderate early-dying symptoms were observed on several lines at the Presque Isle and Exeter locations. Dark Red Norland, Russet Norkotah, Russet Norkotah #8, and Yukon Gold displayed moderate early-dying symptoms at the Aroostook Research Farm site. Shepody, Superior, B0766-3, and NY103 had slight early dying symptoms. Legend had pronounced marginal leaf necrosis; however, the symptoms were not typical of early dying. Itasca, Superior, and Yukon Gold had moderate early dying symptoms at Exeter. No late blight infection was observed in the 1999 trials. Plant stand equaled or exceeded 90% of targets for most NE184 lines. The only exception at Presque Isle was Katahdin at 88%. Katahdin (77%), Kennebec (78%), Yukon Gold (68%), NY112 (73%), NY115 (83%), and Shepody (81%) had relatively poor stands at St. Agatha. Yields were quite high at all three sites.

NE184 Regional Potato Variety Trials at Presque Isle, Exeter, and St. Agatha. Yield and quality results from these trials are summarized in the Eastern Regional Trial report and are presented earlier in this publication. Detailed results can be obtained from the authors.

French Fry Processing from the 1998 Aroostook Research Farm Test. French fry color and texture of selected NE184 lines were evaluated under simulated processing conditions (Maine Table 3). Legend and A84180-8 produced french fries that were equal to Russet Burbank in quality. Texture scores for Legend, Shepody, A84118-3, A84180-8, and A86102-6, were statistically equal to those of Russet Burbank.

Aroostook Research Farm Small-scale Storage Evaluations. Limited data on storage and processing characteristics were collected from 38 NE184 varieties and clones during the 1998-99 storage season (Maine Tables 4 and 5). Chip colors from 50°F storage in February were acceptable for many lines with anticipated chipping potential. Lines with outstanding chip color from 50°F February storage were: Atlantic, MaineChip, Niska, B0766-3, NY102, and NY103. Most lines in the medium chipping trial produced good chip colors directly from 45°F storage; however, none of the lines produced good chips directly out of 38°F storage. MaineChip, Monona, Snowden, and NY102 reconditioned well from 38°F storage. B0766-3, NY102, and NY103 provided good chip colors through late April evaluations.

Chipping of samples from the Exeter site took place in March. Lines with particularly good color from 50°F storage were: MaineChip, Snowden, B0766-3, and NY102. The following lines reconditioned well from 45°F storage: MaineChip, Snowden, B0766-3, and NY102.

After-cooking darkening scores are presented in Maine Table 4. Only Russet Norkotah #8 and A81386-1 received poor color scores. Sloughing was observed in Atlantic, Kennebec, MaineChip, Russet Burbank, Russet Norkotah #3, AF1615-1, and B1004-8. Washed appearance ratings were particularly outstanding for Katahdin, AF1615-1, B0564-8, and NY103.

Russet Burbank, A84118-3, A84180-8, AF1437-1, and NY103 required at least 200 days to reach the one-half-inch sprout stage. NorDonna, and AF1565-12 reached the one-half-inch sprout stage in less than 130 days. Selections with very low weight loss (<3.5%) from 38°F storage were: Shepody, Yukon Gold, and B0766-3. Selections with very low weight loss (10% or less) from 50°F storage were: A84118-3, A84180-8, B0811-13, and NY103. Selections with high weight loss (25% or more) from 50°F storage were: Dark Red Norland, MaineChip, AF1480-5, AF1565-12, and B0564-8.

Central Maine Advanced Breeding Lines. MaineChip, AF1668-60, and AF1896-2, were significantly lower yielding than Atlantic (Maine Table 6). B0178-34 had significantly higher yields than Atlantic. AF1775-2 and B1240-1

were very late maturing. Specific gravities of AF1856-1, AF1921-4, AF1921-9, and FL1533 were less than 1.085. Sunburn was the major tuber defect in the trial (Maine Table 7). AF1921-4, AF1921-9, and B01083-51 had >15% sunburn. Several other external defect problems were observed: AF1921-4 (off shapes), B1240-1 (growth cracks), and B0178-34 (scab). There was very little hollow heart in this trial. AF1935-6 and FL1533 had significantly better chip color scores than Atlantic. AF1921-4 and AF1921-9 had the poorest chip colors in the test. Considering all attributes, the most promising numbered lines in this test were: AF1771-2, AF1775-2, AF1935-6, AF1949-1, B0178-34, B1415-7, and B1429A-3.

Northern Aroostook County Advanced Breeding Lines. In the advanced round-white variety test, none of the lines produced significantly higher total or U.S.#1 yields than Atlantic (Maine Table 8). AF1569-2, AF1764-3, AF1766-2, AF1846-2, AF1907-6, AF1908-3, AF1937-4, B1248-5, B1440-18, B1452-21, B1463-12, B1591-1, and B1625-8 produced significantly lower yields. B1425-9, B1450-10, and B1452-21 were very late maturing. AF1470-6 had a specific gravity less than 1.070. B1450-10 had very small tuber size. Katahdin, Kennebec, AF1291-44, AF1455-20, AF1569-2, AF1611-9, AF1766-2, AF1908-3, AF1950-1, B1248-5, B1440-18, B1463-12, B1625-8, and SC8801-2 had more than 15% scab (Maine Table 9). AF1569-2, AF1907-6, AF1938-3, B1248-5, and B1440-18 had severe sunburn problems. AF1470-6, AF1938-3, B1065-51, and B1452-21 had more than 5% growth-cracked tubers. Atlantic, Katahdin, Kennebec, Superior, and B1624-22 had  $\geq$  5% hollow heart out of 40 large tubers examined. Considering all attributes, the numbered lines in this test that were considered worthy of continued evaluation were: AF1455-20, AF1470-6, AF1611-9, AF1758-7, AF1763-2, B1065-51, B1425-9, B1598-4, and SC8801-2.

In the advanced russet or long-type variety test, only AF1753-16 produced significantly higher total yields than all three check varieties (Maine Table 10). AF2048-3 was very low yielding. In addition, AF1700-11, AF2004-2, AF2005-3, AF2015-14, B1463-1, and B1649-8 were significantly lower yielding than Russet Norkotah. AF1291-113, AF1753-12, AF2001-4, and AF2005-3 had specific gravities less than

1.080. AF2015-14 and AF2048-3 had very small tubers. All of the test lines had excessive scab incidence (Maine Table 11). AF2005-3, AF2048-3, and B1463-1 had more than 5% growth-cracked tubers. Russet Burbank and AF1700-11 had more than 10% misshapen tubers. Russet Burbank, AF2004-2, AF2005-3, AF2015-14, and B1463-1 had  $\geq 7.5\%$  hollow heart out of 40 large tubers examined. AF2015-14, B1409-2, B1463-1, and MN15620 had significantly better chip color than Russet Burbank. Considering all attributes, the numbered lines in this test that were considered worthy of continued evaluation were: AF1156-14, AF1753-12, AF1753-16, AF1808-18, B1409-2, B1649-8, and MN15620.

Presque Isle Advanced Red- and Purple-skinned Breeding Lines. B1145-2, B1495-15, B1521-2, B1523-4, B1526-1, and B1529-1 had U.S.#1 yields which were equal to Dark Red Norland (Maine Table 12). B1523-4 was rated as the most attractive of the lines (Maine Table 13). B1491-5, B1493-3, B1495-15, B1524-2, and B1526-1 had more than 5% growth-cracked tubers. Skinning and poor tuber appearance was a problem for B1529-1. Considering all attributes, the numbered lines in this test that were considered worthy of continued evaluation were: B1145-2, B1492-12, B1493-1, B1521-2, B1523-4. B1523-4 was the best prospect in this trial.

Promising Selections in the 1999 NE184 Regional Variety Trials. Selections that performed particularly well in the 1999 regional trials were: NY101 and NY103 (medium maturing, table lines); NorDonna (red-skinned, white-fleshed table line); B0766-3, NY112, and NY115 (mid-season chipstock lines); NY102 continues to look good based on past trials and storage tests); AF1615-1 (mid- to late-season table lines); Russet Norkotah #8 (mid- to late-season fresh market russet); A8495-1, A84180-8, and AO82611-7 (mid- to late-season; table and processing russets).

**Maine Table 1.** Trial sites and management practices for the 1999 potato variety trials.

Site information and/or Mgt. Practices	Aroostook Research Farm	Central Maine	Northern Aroostook County
Location:	Presque Isle	Exeter	St. Agatha
Grower Cooperator:	n/a	Crane Farms	LaBrie Farms
Soil Test Results:			
pH	5.7	5.8	5.8
P (lbs/A)	16.0 MH	22.1 H	19.6 H
K "	240 (4.5%, MH)	364 (7.9%, VH)	252 (4.1%, MH)
Mg "	194 (11.9%, MH)	119 (8.2%, M)	312 (16.2%, H)
Ca "	1654 (61.3%, MH)	1551 (65.2%, MH)	2099 (66.4%, MH)
CEC meq/100g	6.8	5.9	7.9
OM %	3.8	3.9	4.7
Previous Crop:	timothy/clover	corn	oats
Fall Tillage:	moldboard plow	chisel plow	soil-builder
Spring Tillage:	disk & harrow, 2X	chisel plow	soil-finisher
Planting Date:	May 12-13	May 6	May 19
At-planting Insectic.:	imidacloprid 0.81 pt/A	imidacloprid 0.88 pt/A	none
At-plant Fertilization:	140-140-140	180-150-230	150-150-150
Other Fertilization:	none	70 lbs/A K topdressed	
Herbicide Program:	1.0 linuron.+  0.023 rimsulf.  POST	1.75 linuron, PE  0.25 metrib., POST	0.4 metrib., GCK plus 1.5 pt/A paraquat, GCK
Irrigation:	No	Yes (3.5")	Yes (1.5") to russets only
Vine Desiccation: (initial applic.)	Aug. 23 (E/ME) Aug. 30 (meds., reds) Sept. 8 (lates + russets)	Sept. 1	Sept. 6
Harvest:	Sept. 20 (E/ME) Sept. 20 (meds.) Sept. 30 (lates + russets)	Sept. 9	Oct. 7

Maine Table 2. 1999 Rainfall Summary.

Month	Rainfall by Location and Month (inches)		
	Presque Isle	Exeter <sup>1</sup>	St. Agatha <sup>1</sup>
May	1.44	1.06	n/a
June	4.11	3.10	3.58
July	2.53	1.73 (3.73)	3.00 (3.75)
August	4.49	1.65 (3.15)	2.48 (3.23)
Sept.	9.40	5.77	5.76
Total	21.97	13.31 (16.81)	n/a
Total (June 1 to August 31)	11.13	6.48 ( 9.98)	9.06 (10.56)

<sup>1</sup>The Exeter site received approximately 3.5 inches of supplemental irrigation water during 1999. The numbers in parentheses indicate combined rainfall and supplemental irrigation. The St. Agatha russet sites received approximately 1.5 inches of supplemental irrigation water during 1999. The St. Agatha round-white varieties were not irrigated.



Maine Table 3. French fry color and texture of selected potato clones and varieties under simulated processing conditions<sup>1</sup>. All varieties were grown at Presque Isle, Maine, during 1998.

Variety	Color Grade <sup>2</sup>		Grayness <sup>3</sup> Index	Mealiness <sup>4</sup> Index	Comments <sup>5</sup>	Overall Rating <sup>6</sup>
	Rating	Index %Dark				
Russet Burbank (std)	000-0	1.20	0.0	3.91	U	-
Century Russet	00 -4	3.95	37.5	2.76	Ir	-
Legend	000-00	0.49	0.0	4.14	U	O
Russet Norkotah	000-0	0.60	0.0	2.54	U	-
Russet Norkotah #3	000-1	1.74	0.0	3.21	U	-
Russet Norkotah #8	000-0	1.25	0.0	3.00	U	-
Shepody	00 -3	2.41	2.5	4.31	U	-
A81386-1	000-0	0.82	0.0	3.02	U,Sh	-
A84118-3	000-1	2.22	0.0	4.16	Ir,Sh	-
A84180-8	000-0	0.65	0.0	3.45	U	O
A86102-6	000-1	3.04	0.0	3.29	Ir,Sh	-
AO82611-7	000-1	0.96	0.0	3.12	U	-
B1004-8	000-2	2.65	2.5	3.96	Ir,Sh	-
W1099Rus	000-0	0.50	0.0	2.94	U	-
Waller Duncan LSD (k=100)		0.68	7.5	0.70		

<sup>1</sup>Two center raw tuber slices were cut from each of ten tubers. The slices were rinsed in cool water, blanched for 8 minutes at 170°F, par-fried at 375°F for 80 seconds, and quick frozen at -30°C in plastic bags. Four such replications were processed on December 8, 1998 and held at -15°F until evaluation. Prior to evaluation, samples were finish-fried at 360°F for 2-1/2 minutes on April 13, 1999, blotted dry with a paper towel, and cooled for 6 minutes. Processing was done at the Department of Food Science and Human Nutrition, University of Maine, Orono, ME (We appreciate the help of Dr. Al Bushway). All tuber samples were stored at 50°F, 85% R.H. from harvest until processing. Percent dark = the percentage of fries that were rated in the 2 category or darker after processing (out of 80 slices representing 40 tubers).

<sup>2</sup>Color Grades are from USDA color standards chart #64-1, third edition. Lower indices indicate lighter color.

<sup>3</sup>Grayness indices represent weighted means derived from the following evaluation scale: 4 = no graying;

3 = slight graying; 2 = moderate graying; 1 = intense graying.



Maine Table 3. - Continued.

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Mealiness indices represent weighted means using the following scale: 6=very dry and mealy; 5 = dry, mealy; 4 = mod. mealy, sl. moist; 3 = sl. mealy, mod. moist; 2 = soggy, not mealy; 1 = very soggy, not mealy.

Comments: U = uniform fried color; Ir = french fries were irregular in color; dark blotches detracted from appearance of product; Be = Dark blotches on ends of many fries; Bc = Dark blotches in centers of many fries; Bl = general blotchy appearance of fries; Sh = Short fries from small and/or round tubers.

Overall rating: quality rated better (+), not different (o), or poorer (-) than Russet Burbank.

**Maine Table 4.** Chip color from 38°F, 45°F, and 50°F storage, reconditioning potential, washed appearance ratings, days to sprout formation, and storage weight losses at 38°F and 50°F for 38 potato varieties grown at Presque Isle, Maine, during 1998 and stored during the 1998-1999 storage season.

Variety	Chip Color from Storage			After-Cooking Darkening <sup>3</sup>	Washed Appearance Index <sup>4</sup>	Days to Indic. Storage Wt.		
	50°F <sup>1</sup> 45°F <sup>1</sup> 38°F <sup>1</sup> Recond. <sup>2</sup>					Sprout Length <sup>5</sup>		Loss % <sup>6</sup>
						PIP	½"	38°F 50°F
<u>Early/Med. Early Trial:</u>								
Superior (std)	56	58	16	49	8.4	99 (5) PC, SB, BS	128 156 3.8 16.5	
Atlantic	63	66	18	56	8.5sl	19 (3) PC, SB, BS	135 163 5.5 15.1	
Chieftain	42	--	--	--	8.4	95 (4) PC, BS, SCL	156 184 3.5 14.1	
Itasca	58	60	17	44	8.8	90 (7) SZ	128 170 4.4 15.7	
Monona	64	67	29	62	8.1	96 (5) PC, SZ, BS	128 177 4.2 16.5	
NorDonna	43	--	--	--	8.4	90 (7) SZ	107 128 6.4 23.8	
Norland, Dk. Red	53	--	--	--	8.8	82 (4) PC, BS	135 156 4.6 37.0	
AF1437-1	60	--	--	--	8.2	97 (6) SB, GC	177 212 4.4 13.0	
AF1565-12	44	--	--	--	8.3	96 (5) PC, SB, SS	100 128 8.2 36.3	
B0811-13	58	60	12	37	8.5yf	97 (7) SS, B, SCL	149 191 3.6 9.4	
Waller Duncan LSD	4	3	3	7				
<u>Medium Chipping Trial:</u>								
Atlantic (std)	68	70	18	57	8.8	92 (7) PC, SB, B, BD	143 171 3.5 19.6	
Kennebec	64	65	20	57	8.7sl	96 (5) PC, SB, RS, SS, BD	164 185 3.8 16.3	
MaineChip	67	70	46	66	8.2sl	70 (3) PC, SZ, BD	157 192 5.0 27.0	
Niska	69	72	20	58	8.7	98 (5) PC, SS	129 164 3.7 13.8	
Snowden	64	70	27	64	8.5	83 (7) PC, B, BD, SZ	122 157 3.5 18.8	
B0564-8	64	68	32	54	8.8	91 (8) BD, SZ	122 150 3.9 25.1	
B0766-3	69	71	26	62	8.4	98 (6) BD, PR	122 150 3.4 21.0	
NY102	70	71	26	65	8.4	98 (7) SS, BS, BD	143 199 5.4 13.5	
NY103	68	70	28	56	8.5	81 (8) SB, SS	192 213 4.0 9.7	
Waller Duncan LSD	2	2	5	4				

Maine Table 4. Continued.

Variety	Chip Color from Storage		After-Cooking Darkening <sup>3</sup>	Washed Appearance Index <sup>4</sup>	Days to Indic. Storage Wt.	
	50°F <sup>1</sup>	45°F <sup>1</sup> 38°F <sup>1</sup> Recond. <sup>2</sup>			Sprout Length <sup>5</sup> PIP ½"	Loss % <sup>6</sup> 38°F 50°F
<u>Late Trial:</u>						
Katahdin	46	42 16	8.5 39	91 (8) SS,BD	114 170	4.8 21.0
Shepody	51	46 12	8.3 34	93 (5) PC,M,RS,B	142 177	3.3 11.1
Yukon Gold	55	-- --	8.7yf --	97 (6) PC,BD	170 198	3.1 10.7
AF1480-5	63	-- --	8.2 --	96 (6) PC,SS,BS	114 142	4.8 27.0
AF1615-1	43	-- --	8.3sl --	94 (8)	114 142	5.1 23.4
Waller Duncan LSD	6	5 2	4			
<u>Russet/Processing Trial:</u>						
Russet Burbank	52	51 14	8.4sl 41	86 (5) PR	170 212	3.8 10.1
Century Russet	43	44 10	8.7 20	86 (5) NR,BS	156 184	4.5 13.0
Legend	65	62 18	8.0 46	71 (6) SZ,SE	163 184	5.3 18.8
R. Norkotah	56	55 12	8.1 36	80 (6) SZ	149 177	3.9 16.3
R. Norkotah #3	49	45 12	8.0sl 32	86 (3) M,SZ	149 184	5.1 12.2
R. Norkotah #8	53	51 12	7.8 37	86 (7) SZ	156 184	4.0 13.3
Shepody	46	50 13	6.6 35	85 (4) PC,SB,RS,PE	135 163	2.9 16.9
A81386-1	64	60 19	7.5 49	88 (5) M,SZ	149 191	4.6 13.5
A84118-3	53	48 11	8.8 29	87 (5) SS,RS,B,PR	163 212	5.5 9.1
A84180-8	53	50 13	8.4 25	77 (6) SZ,PR	177 212	5.2 9.9
A86102-6	46	48 18	8.8 29	81 (3) PC,M,SZ	177 198	5.8 12.1
A082611-7	58	56 16	8.6 41	77 (3) M,SZ	156 198	5.1 14.6
B1004-8	56	52 15	8.6sl 50	75 (4) SZ,PR	135 149	5.0 20.3
W1099Rus	56	53 13	8.5 48	90 (6) GC,SZ	135 163	5.1 21.5
Waller Duncan LSD	6	7 3	5			

Maine Table 4. Continued.

<sup>1</sup>Stored at 38°F, 45°F, or 50°F, 85% R.H. from harvest until February 3 to 11, 1999. Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors.

<sup>2</sup>Reconditioned samples were taken from 38°F and placed at 70°F for a 3-week period starting on January 12, 1999. See Agtron description under footnote #1.

<sup>3</sup>Samples were stored at 45°F and 85% R.H. from harvest until March 31, 1999. They were then warmed to 65°F for three days. Tubers were diced and then blanched for 5 min, cooled to 120°F, and then rated after 30 min. with a Munsel Neutral Color Scale. Higher indices indicate lighter color. Key to codes: sl=sloughing was a defect in this sample; syl=slightly yellow; yl=yellow; pc=unusually poor overall color.

<sup>4</sup>Unreplicated samples weighing approximately 7500 grams were stored at 45°F and 85% R.H. until January 1999. Tubers were then washed and graded. First number indicates % U.S.#1 grade tubers in sample. Numbers in parentheses indicate subjective appearance of the sample using standard NE184 codes. Codes indicate major external defects as follows: M=misshapen, NR=nonuniform russetting, PC=poor color, SB=sunburn, GC=growth cracks, CS=common scab, SS=silver scurf, RS=russet scab, DR=dry rot, SR=soft rot, BS=black scurf, LE=enlarged lenticles, B=bruises, BD=blackdot, PW=powdery scab, RA=red areas, PU=purple areas on seed end, SZ=small tuber size, FL=flat tubers, PR=pear shaped, SK=cracked skin; SCL=scaly skin; SE=Stem-end decay or discoloration.

<sup>5</sup>Tubers were stored at 45°F, 85% R.H.

<sup>6</sup>Percentage sprout and weight loss following storage from harvest until April 12, 1999 at indicated temperature and 85% R.H. Codes "s" or "r" indicate heavily sprouted or samples with more than two spoiled tubers, respectively.

**Maine Table 5.** March through May chip color scores for NE184 lines grown in central Maine (East Corinth) and northern Maine (Presque Isle) during 1998 and chipped during the 1998-99 storage season.

Variety or Breeding Line	Agtron M35 Score by Location, Chipping Date, and Storage Temperature <sup>1</sup>				
	Central Maine (East Corinth)		Northern Maine (Presque Isle) from 50°F		
	March 3 45°F	March 2 45°F recond. 50°F	March 1	Feb. 24 March 26	April 21
Atlantic	46.4	53.3	55.7		
Itasca	40.8	48.4	51.2		
Katahdin	30.6	33.2	41.6		
Kennebec	42.4	47.2	53.9		
MaineChip	58.4	66.3	64.0	63.8	64.8
Monona	53.2	56.0	56.8		
Niska	47.5	56.2	60.2		
Snowden	60.7	63.2	63.6	63.7	64.8
Superior	37.2	44.4	51.4		
Yukon Gold	27.5	34.4	38.3		
AF1424-7	48.3	56.6	61.8		
AF1437-1	59.3	39.2	46.0		
AF1615-1	30.8	39.0	41.7		
B0564-8	44.4	49.0	54.7		
B0766-3	51.6	61.9	62.7	66.0	65.7
NY102	60.0	63.4	63.0	65.4	64.8
NY103	51.0	55.0	59.3	62.6	63.6
W-Duncan LSD (k=100)	6.6	4.1	3.0	2.7	1.7
					NS

<sup>1</sup>Chip color scores are from an Agtron Model M-35 Process Analyzer (Agtron, Inc., Sparks, Nevada; calibrated with black disk "0" = 0 and white disk "90" = 90). Chips were crushed and reported values are means from four replicate samples. Each sample was read three times and was thoroughly mixed between readings. Higher numbers indicate lighter chip colors. Reconditioned samples were warmed to room temperature (65° to 70°F) and held at room temperature for two weeks.

**Maine Table 6.** Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 20 medium-maturing, chipping varieties and advanced breeding lines grown at Exeter, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184, 118 days)

Variety	Total US#1 Yield (cwt/A) <sup>1</sup>		% Stand (spacing) <sup>2</sup>	Size Distribution by Class <sup>3</sup> (%)													Spec. Grav.
	Yield >1 <sup>7</sup> / <sub>8</sub> " cwt/A	% of >2 <sup>1</sup> / <sub>4</sub> " std.		1	2	3	4	5	6	1 <sup>7</sup> / <sub>8</sub> to 4"		2 <sup>1</sup> / <sub>4</sub> to 4"					
										2 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>				
Atlantic (std)	335	308	100	280	96(10)	2	9	28	45	16	1	97	88	61	1.103		
MaineChip	233	197	64	95	96(10)	13	45	35	7	0	0	87	42	7	1.106		
Snowden	299	280	91	207	99(14)	5	25	41	28	1	0	95	71	30	1.098		
AF1668-60	243	20	68	17	92(10)	4	15	27	46	9	0	96	82	55	1.091		
AF1771-2	332	297	96	269	95(10)	2	9	22	49	15	2	96	87	64	1.087		
AF1775-2	332	286	93	258	93(10)	2	10	21	50	17	1	98	88	67	1.093		
AF1845-7	310	283	92	192	100(10)	6	30	35	27	2	0	94	64	29	1.086		
AF1856-1	309	290	94	269	97(10)	2	7	18	47	27	0	98	91	73	1.083		
AF1896-2	212	184	60	137	99(10)	5	25	42	27	2	0	95	70	28	1.088		
AF1921-4	296	207	67	163	91(10)	5	20	26	41	8	0	95	75	49	1.082		
AF1921-9	325	246	80	209	93(10)	4	14	27	45	10	0	96	82	55	1.083		
AF1935-6	318	292	95	226	99(10)	5	21	35	31	8	0	95	74	40	1.093		
AF1949-1	336	290	94	237	97(10)	5	18	32	39	6	0	95	77	45	1.095		
B0178-34	378	307	100	270	94(10)	3	11	28	45	12	2	96	84	56	1.103		
B01083-51	312	230	75	207	95(10)	2	10	23	48	16	2	96	87	64	1.097		
B1240-1	316	220	71	208	97(10)	2	5	13	43	32	6	93	88	75	1.091		
B1415-7	335	299	97	283	95(10)	1	5	11	49	34	0	99	94	83	1.089		
B1429A-3	366	333	108	279	97(10)	4	16	21	51	8	0	96	80	59	1.093		
FL1533	342	307	100	284	97(10)	1	8	16	48	27	0	99	91	75	1.084		
FL1625	294	270	88	242	98 ( 8)	2	10	24	48	14	2	96	86	63	1.092		
Waller Duncan																	
LSD (k=100)	42	42		40								3	5	7	0.004		

<sup>1</sup>U.S.#1 yield = yield 1 7/8 to 4" excluding external defects.

<sup>2</sup>Inches between seedpieces noted within parentheses.

<sup>3</sup>Size classes: 1=1 1/2 to 1 7/8"; 2=1 7/8 to 2 1/4"; 3=2 1/4 to 2 1/2"; 4=2 1/2 to 3 1/4"; 5=3 1/4 to 4"; 6=over 4".



**Maine Table 7.** Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 20 medium-maturing, chipping varieties and advanced breeding lines grown at Exeter, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184)

Variety	Plant Data <sup>1</sup>			Tuber Data <sup>1</sup>			Tuber Defects (%)					Hollow					
	Size 7-7	Vine Matur. 8-12	Matur. at Vinekill	Skin Texture	Shape	Appear- ance	Total burn	Sun-			Scab	Rot	Heart Chip				
								shapen	cracks	Growth							
														mis-			
Atlantic (std)	6	6	3.0	6sc	2	7	5.9	2.4	0.5	0.3	2.6	0.2	0	65			
MaineChip	6	5	1.8	7	2	3	3.1	3.1	0.0	0.0	0.0	0.0	0	65			
Snowden	6	7	3.3	6sc	2	5	1.9	1.0	0.0	0.0	0.9	0.0	0	63			
AF1668-60	3	4	1.0	7	3	3	11.1	8.7	0.0	2.2	0.2	0.0	0	66			
AF1771-2	6	7	2.5	6	2fl	5	6.8	4.5	0.3	0.6	1.4	0.0	0	63			
AF1775-2	7	8	3.5	8	4fl	7	11.8	8.1	0.4	0.7	2.7	0.0	0	65			
AF1845-7	5	5	2.0	6	2	4	3.1	2.8	0.0	0.0	0.4	0.0	0	65			
AF1856-1	4	4	1.3	7	2	7	4.7	3.4	1.2	0.1	0.0	0.0	0	66			
AF1896-2	5	5	1.3	6sc	3	6	8.3	8.3	0.0	0.0	0.0	0.0	0	66			
AF1921-4	6	5	1.8	8	2	5	26.8	20.3	6.0	0.2	0.3	0.0	1	61			
AF1921-9	6	3	1.3	7	2fl	6	21.8	18.6	0.3	0.4	2.5	0.0	0	60			
AF1935-6	8	7	3.1	7	2	5	3.7	2.0	0.1	0.0	1.6	0.0	0	67			
AF1949-1	6	6	3.0	6	2fl	4	9.3	4.8	1.0	3.5	0.0	0.0	0	64ds			
B0178-34	6	6	2.3	7	2	5	14.8	9.1	0.2	0.2	5.3	0.0	0	64			
B01083-51	6	6	2.0	7	3	4prs	23.2	18.6	1.0	2.1	1.6	0.0	0	63			
B1240-1	8	8	4.0	6	2	3	24.9	8.5	2.1	10.9	3.3	0.0	0	65			
B1415-7	7	7	3.8	6	2	7	10.0	5.1	0.0	4.6	0.3	0.0	0	65			
B1429A-3	6	5	1.5	6	3	4	5.0	3.5	0.4	0.0	1.1	0.0	0	63			
FL1533	5	6	3.3	6	3	7	9.1	7.5	0.3	1.3	0.0	0.0	0	67			
FL1625	6	5	1.8	6	3	5	4.8	4.6	0.0	0.0	0.2	0.0	0	63			

<sup>1</sup>See standard NE184 rating system for key to codes. prs=many pear-shaped; sc=scaley skin; fl=flat tubers.

<sup>2</sup>Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

<sup>3</sup>Chip color from 50°F -- Agtron M35 (higher values indicate lighter color): >60 acceptable; dr=dark vascular ring; ds=dark stem-end of tuber. The chipping date was January 5, 2000. Waller Duncan LSD (K=100) for chip color = 2.

**Maine Table 8.** Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 31 round-white varieties and advanced breeding lines grown at St. Agatha, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184, 110 days)

Variety	Total Yield cwt/A	US#1 Yield >1 7/8" % of std.	Yield (cwt/A) <sup>1</sup> >2 1/4"	% Stand (spacing) <sup>2</sup> 7-1	Size Distribution by Class <sup>3</sup> (%)														Spec. Grav.
					1 2 3 4 5 6 to 4" 1 7/8 2 1/4 2 1/2 to 4" to 4"														
					1	2	3	4	5	6	to 4"	1 7/8	2 1/4	2 1/2	to 4"	to 4"	to 4"		
Atlantic (std)	409	371 100	341	86(10)	2	8	22	48	19	1	97	89	67	1.098					
Katahdin	387	354 95	305	75( 8)	3	13	26	50	7	0	97	84	58	1.083					
Kennebec	445	371 100	342	78( 8)	1	8	13	61	13	4	95	87	74	1.088					
Superior	376	349 94	321	88(10)	2	8	20	51	19	1	98	90	70	1.088					
AF1291-44	358	318 86	293	90(10)	1	8	15	53	21	2	97	89	74	1.084					
AF1455-20	407	378 102	340	88(10)	3	10	20	52	16	0	97	88	68	1.098					
AF1470-6	396	300 81	276	89(10)	2	7	14	42	27	8	91	83	69	1.067					
AF1569-2	290	201 54	170	89(10)	5	14	16	41	21	3	92	79	63	1.075					
AF1611-9	403	368 99	329	90(10)	3	11	25	48	12	1	96	86	60	1.078					
AF1758-7	361	340 92	313	94(10)	2	8	19	55	17	0	98	91	72	1.071					
AF1763-2	447	395 106	330	96(10)	5	16	26	46	7	0	95	79	53	1.074					
AF1764-3	289	267 72	232	84(10)	4	12	28	51	6	0	96	84	57	1.077					
AF1766-2	299	268 72	240	90(10)	2	11	20	52	14	1	98	87	67	1.086					
AF1846-2	325	290 78	252	86(10)	4	12	21	56	7	0	96	84	63	1.081					
AF1907-6	310	229 62	204	93(10)	2	11	24	46	17	0	98	87	63	1.078					
AF1908-3	316	271 73	230	85(10)	3	15	26	50	6	0	97	82	56	1.091					
AF1937-4	336	293 79	252	85(10)	2	13	29	46	8	1	97	84	54	1.087					
AF1938-3	359	265 71	237	80(10)	2	10	17	52	18	1	97	87	70	1.078					
AF1950-1	402	350 94	312	92(10)	2	10	24	55	8	0	98	88	64	1.085					
B1065-51	383	337 91	313	89(10)	2	7	20	56	15	0	98	91	71	1.086					
B1248-5	329	268 72	220	93(10)	5	18	29	44	4	0	95	77	48	1.089					
B1425-9	442	398 107	327	91(10)	3	17	28	42	8	1	95	78	51	1.102					
B1440-18	306	255 69	226	90(10)	2	11	20	49	16	1	97	86	66	1.086					
B1450-10	410	317 85	189	93(10)	15	35	29	19	2	0	85	50	21	1.084					
B1452-21	242	209 56	189	91(10)	2	9	19	52	17	1	97	87	69	1.078					
B1463-12	305	259 70	190	82(10)	7	25	28	37	2	0	93	68	40	1.086					



**Maine Table 9.** Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 31 round-white varieties and advanced breeding lines grown at St. Agatha, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184)

Variety	Plant Data <sup>1</sup>		Tuber Data <sup>1</sup>			Tuber Defects (%)						Hollow Heart Rating <sup>2</sup>
	Size 7-26	Matur. at Vinekill	Skin Texture	Shape	Appearance	Total	Sun-burn	Mis-shapen	Growth cracks	Scab	Rot	
Atlantic (std)	7	6.8	6	2	7	6.8	3.5	1.1	1.8	1.0	0.3	8
Katahdin	8	5.5	8	2	8	5.5	4.5	0.0	0.9	41.6	0.0	3
Kennebec	8	6.5	8	4	5	12.1	9.1	1.6	0.8	27.3	0.6	4
Superior	6	4.8	7sc	4	6	5.3	3.8	0.4	0.6	5.5	0.5	3
AF1291-44	6	4.8	7	3fl	5	8.2	6.2	1.1	0.7	28.6	0.2	0
AF1455-20	8	6.0	7	3	8	4.6	1.9	1.3	1.4	15.6	0.0	0
AF1470-6	5	4.3	7	2	7	17.2	7.6	1.1	7.7	5.4	0.7	0
AF1569-2	5	4.5	7	4	4	32.0	26.9	0.3	4.2	22.7	0.6	0
AF1611-9	7	4.3	7	2	8	5.0	2.7	0.5	0.6	22.7	1.2	2
AF1758-7	5	5.8	7	2fl	8	4.1	3.4	0.0	0.4	3.4	0.3	0
AF1763-2	6	4.8	7	3	5	7.1	1.6	1.2	3.0	0.6	1.3	0
AF1764-3	4	6.0	8	2	4	4.3	2.3	1.6	0.3	6.0	0.1	0
AF1766-2	5	3.5	7	2	5	8.1	5.4	0.2	1.5	22.5	1.0	0
AF1846-2	6	5.3	8	2	7	6.8	3.7	0.0	2.8	6.6	0.4	1
AF1907-6	4	5.0	8	1	8	24.2	17.4	1.7	4.5	5.2	0.6	0
AF1908-3	7	5.5	8	2	5	12.0	6.7	0.5	3.7	24.7	1.1	0
AF1937-4	7	5.5	7	2fl	7	10.0	2.7	0.2	4.5	11.0	2.7	1
AF1938-3	7	5.8	7	2	7	23.9	15.2	0.3	7.3	14.2	1.1	2
AF1950-1	6	6.0	7	4	6ptd	11.4	1.9	5.8	2.9	16.6	0.8	1
B1065-51	7	5.3	6	2	6	10.0	1.3	1.3	6.8	2.7	0.5	0
B1248-5	6	3.5	8	2	7	14.8	10.3	1.5	1.5	21.2	1.5	2
B1425-9	9	7.0	6	2	7	5.5	3.3	0.5	0.5	9.0	1.2	0
B1440-18	6	5.0	7	3	5ptd	14.8	11.3	1.0	2.3	41.1	0.2	2/30
B1450-10	8	7.0	6	2	5	8.7	1.8	4.0	2.3	3.7	0.6	2
B1452-21	8	8.0	7	3fl	6	10.6	1.0	0.9	8.5	9.8	0.3	1

Maine Table 9. Continued

Variety	Plant Data <sup>1</sup>		Tuber Data <sup>1</sup>			Tuber Defects (%)				Hollow	
	Size	Matur.	Skin	Shape	Appear-	Total	Sun-	Mis-	Growth	Scab	Heart
	7-26	at	Texture		ance		burn	shapen	cracks	Rot	Rating <sup>2</sup>
		Vinekill									
B1463-12	5	5.0	7	5	4ptd	8.5	4.1	1.2	2.4	29.4	0.7
B1591-1	6	5.5	6sc	2	6	3.8	0.8	0.3	2.6	10.5	0
B1598-4	7	4.0	7	2	6	2.1	1.9	0.0	0.1	13.5	1
B1624-22	8	6.0	6	3	6	6.2	1.2	0.4	3.0	7.9	26
B1625-8	5	5.0	7	2	7	5.2	1.9	0.2	2.8	18.3	0
SC8801-2	7	5.5	8	4	5	9.0	6.7	0.2	1.0	15.5	1

<sup>1</sup>See standard NE184 rating system for key to codes. sc=scaley skin; ptd=many pointed ends; fl=flat tubers.

<sup>2</sup>Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined. The number cut is indicated when sample size is less than 40.

**Maine Table 10.** Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 18 russet/processing (long-tuber-type) varieties and advanced breeding lines grown at St. Agatha, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184)

Variety	Total Yield cwt/A	US#1 Yield (cwt/A) <sup>1</sup> >1½" % of std.	% Stand (spacing) <sup>2</sup> 7-1	Size Distribution by Class <sup>3</sup> (%)													Spec. Grav.
				by length													
				1	2	3	4	5	8oz	12oz.	>3"	>3½"	>4"	>4½"	>5"		
R. Burbank (std)	286	254	100	168	98(16)	36	48	10	4	3	17	7	58	34	1.089		
R. Norkotah	378	355	140	299	99(14)	16	43	27	7	7	41	14	80	66	1.082		
Shepody	369	288	113	261	83(10)	10	41	26	12	12	49	23	87	76	1.086		
AF1156-14	375	324	128	306	97(12)	5	28	33	19	15	66	34	88	78	1.090		
AF1291-113	398	352	139	322	92(12)	8	33	35	14	10	58	24	89	76	1.078		
AF1700-11	276	231	91	212	99(12)	8	29	30	20	12	63	33	90	79	1.083		
AF1753-12	425	372	146	330	100(12)	11	39	28	15	6	50	21	83	55	1.076		
AF1753-16	499	361	142	340	95(12)	6	25	34	18	16	69	34	93	89	1.088		
AF1808-18	342	297	117	273	92(12)	8	32	40	13	7	60	20	90	66	1.088		
AF2001-4	369	297	117	272	99(12)	9	35	30	19	7	57	27	90	65	1.074		
AF2004-2	325	274	108	242	96(12)	12	49	28	9	1	39	11	87	61	1.088		
AF2005-3	283	203	80	169	86(12)	18	54	23	5	1	29	6	74	54	1.072		
AF2015-14	276	234	92	155	93(12)	34	49	14	3	0	17	3	63	47	1.090		
AF2048-3	228	205	81	136	92(12)	34	56	9	0	1	10	1	55	29	1.080		
B1409-2	340	315	124	279	90(12)	12	37	32	12	7	51	19	85	67	1.096		
B1463-1	292	115	45	110	84(12)	5	33	34	18	11	63	28	94	83	1.083		
B1649-8	267	256	101	205	89(12)	20	53	22	4	0	27	4	68	46	1.089		
MN15620	362	337	133	286	90(12)	15	50	24	7	4	34	11	80	64	1.085		
Waller Duncan																	
LSD (k=100)	52	56	57								10	10	7	26	0.007		

<sup>1</sup>U.S.#1 yield = yield >1½ " excluding external defects with the exception of scab.

<sup>2</sup>Inches between seedpieces noted within parentheses.

<sup>3</sup>Size classes: 1= <4 oz; 2=4 to 8 oz.; 3=8 to 12 oz.; 4=12 to 16 oz.; 5= >16 oz...



**Maine Table 11.** Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 18 russet/processing (long-tuber-type) varieties and advanced breeding lines grown at St. Agatha, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184)

Variety	Plant Data <sup>1</sup>		Tuber Data <sup>1</sup>			Tuber Defects (%)					Hollow			
	Size 7-26	Matur. at	Vinekill	Skin Tex-	Shape	Appear- ance	Total	Sun- burn	Mis- shapen	Growth cracks	Scab	Rot	Heart Rating <sup>2</sup>	Chip Color <sup>3</sup>
R. Burbank (std)	8	7.5		4nr	6	3	11.9	0.1	11.1	0.8	0.2	0.0	9	48
R. Norkotah	5	4.3		3nr	7	5	6.0	1.2	3.2	1.0	36.5	0.5	0	44
Shepody	7	5.3		7	7	5	22.7	11.1	8.8	0.0	74.6	2.8	0	54
AF1156-14	8	5.3		2nr	5	5	15.2	3.3	3.3	4.0	60.4	4.6	2	48
AF1291-113	7	4.3		7	6	5	11.0	8.4	1.5	0.4	54.0	0.7	1	30
AF1700-11	6	5.5		2	6	7	16.5	1.1	14.2	0.3	37.1	0.8	0	51
AF1753-12	7	5.0		4	6	7	12.5	6.4	3.4	0.8	14.5	1.9	0	37
AF1753-16	8	7.5		4	7	7	27.6	10.8	9.5	3.7	58.6	3.7	0	47
AF1808-18	6	4.5		3	6	4	13.1	3.2	2.1	2.8	85.1	5.0	2	50
AF2001-4	5	3.5		7	6	3ptd	19.1	10.8	5.4	0.5	93.8	2.5	0	47
AF2004-2	6	3.0		3	6	4ptd	15.8	6.9	5.1	0.9	87.1	2.9	4	45
AF2005-3	5	4.8		3	5	3ptd	28.6	16.8	1.2	7.4	85.2	3.2	4	44
AF2015-14	6	5.0		7	5	5	15.3	13.1	1.7	0.0	76.2	0.5	7	53
AF2048-3	4	3.3		2	6	4	10.2	1.8	1.0	5.7	80.4	1.7	0	51
B1409-2	7	5.3		3	6	6	7.6	0.4	1.9	1.2	40.0	4.0	0	58
B1463-1	5	4.8		2	6	3	61.0	0.0	2.3	57.6	68.0	1.0	18	53
B1649-8	6	6.3		3	5	8	4.0	1.5	1.3	0.2	29.5	1.1	0	50
MN15620	8	7.0		6sp	5	5	7.5	3.0	2.5	0.7	88.6	1.2	1	60

<sup>1</sup>See standard NE184 rating system for key to codes. sp=salmon pink/pale red; nr=nonuniform russetting; ptd=many pointed ends.

<sup>2</sup>Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

<sup>3</sup>Chip color from 50°F -- Agtron M35 (higher values indicate lighter color): >60 acceptable; dr=dark vascular ring. The chipping date was January 3, 2000. Waller Duncan LSD (K=100) for chip color = 5.

**Maine Table 12.** Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity for 14 red- and purple-skinned varieties and advanced breeding lines grown at Aroostook Research Farm, Presque Isle, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184)

Variety	Total US#1 Yield (cwt/A) <sup>1</sup>		Stand (spacing) <sup>2</sup>	Size Distribution by Class <sup>3</sup> (%)												Spec. Grav.
	Yield cwt/A	% of std.		>2 1/4"												
				1	2	3	4	5	6	1 7/8 to 4"	2 1/4 to 4"	2 1/2 to 4"				
Norland, DR (std)	324	294	100	238	89( 8)	6	19	30	42	4	0	94	76	45	1.069	
B0811-4	254	212	72	101	85( 8)	13	45	32	10	0	0	87	42	10	1.089	
B1145-2	321	291	99	211	89( 8)	6	26	42	24	2	0	94	68	26	1.072	
B1491-5	244	202	69	117	80( 8)	12	38	33	18	0	0	88	50	18	1.075	
B1492-12	310	257	87	112	75( 8)	15	48	28	8	1	0	85	37	9	1.090	
B1493-1	286	231	79	128	79( 8)	14	39	29	18	1	0	86	47	19	1.087	
B1493-3	249	211	72	149	72( 8)	9	28	29	33	2	0	91	63	34	1.089	
B1495-6	258	234	80	175	76( 8)	7	23	33	34	1	0	93	69	36	1.079	
B1495-15	297	273	93	216	88( 8)	4	19	39	34	4	0	96	77	38	1.085	
B1521-2	333	304	103	188	98( 8)	8	37	39	17	0	0	92	55	17	1.090	
B1523-4	355	330	112	239	83( 8)	6	26	39	28	1	0	94	68	29	1.086	
B1524-2	296	244	83	148	87( 8)	12	35	36	17	1	0	88	53	17	1.069	
B1526-1	315	263	90	182	76( 8)	8	30	30	31	2	0	92	62	33	1.087	
B1529-1	321	282	96	190	87( 8)	10	30	30	28	3	0	90	60	30	1.087	
Waller Duncan LSD (k=100)	41	36	49									3	10	12	0.003	

<sup>1</sup>U.S.#1 yield = yield 1 7/8 to 4" excluding external defects.

<sup>2</sup>Inches between seedpieces noted within parentheses.

<sup>3</sup>Size classes: 1=1 1/2 to 1 7/8"; 2=1 7/8 to 2 1/4"; 3=2 1/4 to 2 1/2"; 4=2 1/2 to 3 1/4"; 5=3 1/4 to 4"; 6=over 4".

**Maine Table 13.**

Plant size, maturity at vinekill, tuber shape, tuber defects, hollow heart ratings, and chip color scores for 14 red- and purple-skinned varieties and advanced breeding lines grown at Aroostook Research Farm, Presque Isle, Maine - 1999. (Advanced Breeding Line Variety Trial, Pre-NE184)

Variety	Plant Data <sup>1</sup>		Tuber Data <sup>1</sup>		Tuber Defects (%)							Hollow Heart Rating <sup>2</sup>	
	Size 8-12	Vine Matur. at 8-25 Vinekill	Skin Texture	Shape	Appearance	Total	Sun- burn	Mis- shapen	Growth cracks	Scab	Rot		
Norland, DR (std)	3	3	2.0	7pr	2	7	3.9	1.9	0.8	1.3	0.0	0.0	0
B0811-4	4	3	2.5	7	2fl	6	5.3	3.0	0.6	1.8	0.0	0.0	0
B1145-2	3	2	1.3	6dr	2	7	3.3	0.5	0.2	2.6	0.0	0.0	0
B1491-5	5	5	4.0	7dr	1	7	6.9	0.3	2.0	4.6	0.0	0.0	0
B1492-12	5	5	5.3	7dr	1	6	2.0	0.1	0.9	1.0	0.0	0.0	0
B1493-1	5	5	4.8	7dr	2	7	6.1	1.6	2.0	2.5	0.0	0.0	0
B1493-3	5	5	5.0	sc7	2	6	8.4	0.4	3.4	4.6	0.0	0.0	0
B1495-6	4	4	3.3	7	3	6	2.2	1.4	0.0	0.4	0.0	0.5	0
B1495-15	6	5	4.8	7dpur	2	5	4.8	0.0	0.2	4.6	0.0	0.0	0
B1521-2	8	6	6.0	7sp	2	6	9.6	0.2	0.0	0.4	0.0	0.0	0
B1523-4	6	5	4.8	7br	2	8	1.0	0.8	0.0	0.1	0.0	0.1	0
B1524-2	6	6	5.3	sc7dr	2	7	7.1	0.3	1.0	5.6	0.0	0.2	0
B1526-1	6	5	5.5	7	2	5	10.4	1.5	1.6	7.3	0.0	0.0	0
B1529-1	8	6	6.8	7dpur	2	4sk	2.8	0.0	0.3	1.4	0.0	1.1	0

<sup>1</sup>See standard NE184 rating system for key to codes. sc=scaley; br=bright red skin; dr=dark red skin; pr=medium-red skin; sp=salmon pink; dpur=dark purple; fl=flat tubers; sk=severe skinning at harvest.

<sup>2</sup>Hollow heart rating equals the number of hollow tubers found per 40 large tubers cut and examined.

## MAINE POTATO BREEDING PROJECT

Alvin F. Reeves, Garland S. Grounds, and  
Nena R. Huston.

### Early Generations

A total of 38 parent plants were intercrossed in 51 different combinations (18 russet, 21 chipping and 27 resistant to late blight) to produce 29,425 seeds. An additional 272,750 seeds were obtained from seven field plantings, all with late blight resistant parents. Greenhouse plantings of 159,330 true seeds yielded 28,300 seedlings from which 15,097 first tubers were harvested. Second tubers were harvested from 702 seedlings to be planted in disease screening plots. Round tubers harvested in russet combinations were discarded; misshapen tubers were discarded from all crosses.

A total of 244 new selections were saved from 28,618 single hills (0.85%). From the 336 12-hill plots, 113 (34%) were saved for further testing. Forty-two of 73 60-hill plots were selected.

### Intermediate Generations

Fourth year selections were grown in 200-hill seed increase plots and a replicated yield trial (four replications of 20 hill plots). A total of 82 intermediate and advanced selections were maintained and tested.

### Advanced Generations

A summary of the performance of the most advanced selections is as follows:

#### Chipping Selections:

**AF875-15** (AF186-2 x AF84-4, a sibling of MaineChip) is being grown commercially in

Virginia. It has specific gravity and chip color very much like Atlantic, the dominant chipping variety in the east. Although its yields are 85% of Atlantic, the fact that it very rarely shows heat necrosis, a condition that sometimes causes trouble in Atlantic, makes it a good safety-net variety for a portion of the growers' acreage. Seed will be available from Orenie Bossie and Sons, New Canada, Maine.

**AF 1668-60** (CS7232-4 op) has excellent chip color from storage and good specific gravity. Its yields are less than Atlantic, especially in the southern states. The year 2000 will be its third in the National Snack Food Association Chip Trials.

**AF 1775-2** (AF 901-1 x EB 8109-1) is not as good a chipper from cold storage as Snowden, but has better chip color than Atlantic with similar yield and gravity. It is resistant to net necrosis and has a moderate reaction to late blight, verticillium and common scab. This selection will be entered in the Snack Food Association National Chip Trials in 2000, and small scale commercial trials will be continued in central Maine.

#### Fresh market varieties:

**Quaggy Joe** (CS7589-8 x Portage) was named and released in 1996. A description was published in the November-December issue of the American Journal of Potato Research. It is a medium-late maturing maincrop variety with nice appearance and very high yields. Its pink sprouts, visible in the eyes of the dormant tuber, make it an identifiable fresh market round white. It has specific gravity and cooking qualities very much like Katahdin, the long time favorite fresh market variety of the east. This variety is being grown commercially at Prairie View

Farms, Corinna, Maine.

**AF1437-1** (AF686-3 x B7168-10) is an early maturing selection and has high yields and attractive tubers, with a netted skin similar to Superior, the major early season variety in the east. AF1437-1's low specific gravity gives a worse cooked texture than Superior, but it has better flavor and color. It has resistance to corky ringspot and net necrosis. A commercial trial was done by Greg Smith of H.Smith Packing, Blaine, Maine.

**AF1565-12** (AF303-5 x Sunrise) is another early maturing selection with very good yields and a nice white skin. Although its specific gravity is less than Superior, its cooked color and texture were rated equal to Superior; flavor was better. It is resistant to golden nematode and net necrosis, and has some tolerance to verticillium, scab, and fusarium.

**AF1615-1** (SA821 i-6 x Sunrise) is late maturing, like Katahdin, but with higher specific gravity. Good results were obtained in baking and boiling tests in Maine and Pennsylvania. Yields were equal to Atlantic in several test locations. The skin has a yellow tinge, although the flesh is white. It is resistant to net necrosis, verticillium, golden nematode, corky ringspot, and common scab. Commercial seed was produced by Agway, Inc., Presque Isle, Maine.

#### **Russet Selection:**

**AF1753-16** (CS7981-7 x CF7608-19) is the best russet prospect. It has excellent yield and specific gravity, and its processing quality is within the range of Russet Burbank and Shepody. McCain Foods will have one or two acres of trials in 2000.

#### **Disease Tests**

In cooperation with Drs. David Lambert, Gary Sewell, Bill Brodie, and Robert Goth, all selections from the third field generation were tested for disease resistances. Sixteen of 89 selections tested were resistant to golden nematode in New York tests.

Scab tests consist of two-hill plots replicated twice. Freshly cut seedpieces are dipped in an inoculum just before planting. The inoculum is prepared by peeling scabby tubers and grinding the peelings in a meat grinder with deionized water. In the acid scab test, 88 of 117 selections tested showed some level of resistance. For common scab, 52 of 119 selections were resistant.

Verticillium plots are four-hill plots with two replications. Freshly-cut seedpieces are dipped in an inoculum prepared from petri-dish-grown verticillium cultures. Of 120 selections tested, 38 were resistant to verticillium.

Late blight tests are also replicated twice, but no inoculum is used. Natural infection has killed the test plots before frost every year except 1975. Ten of 82 selections tested were resistant to foliar blight, and 46 had no late blight in the tubers.

Leafroll inoculation is done by means of green peach aphids raised on potato plants infected with leafroll virus. In one plot tubers are harvested and stored at 50°F until January, when they are cut and examined for symptoms of net necrosis. Only 6 of 119 selections inoculated had net necrosis symptoms. In another test, tubers are harvested, stored, and replanted for observation and ELISA testing the following year. There were not enough aphids available for this test in 1999.

Potato aphids were used to transmit PVY to replicated test plots. Eighteen of 29 selections inoculated in 1998 were resistant in 1999 plantbacks. Niska showed little



symptoms, but was positive with ELISA.

**Physiological disorders:** Fourth year selections are tested for hollow heart, shatter bruise, and blackspot bruise. These tests consist of five-hill plots replicated four times. Ten 8-10 ounce tubers are harvested from each plot, and in addition, all of the tubers over four inches (10.16 cm) in diameter are harvested from the hollow heart test. None of seven selections tested were resistant to hollow heart. Bruising is accomplished by dropping a 275 gram weight onto the potato from a height of 12 inches (30.48 cm) for shatter and 6 inches (15.24 cm) for blackspot. The shatter rating is made immediately; the blackspot after 24 hours. Five of 14 selections tested were resistant to blackspot bruising; and three of six to shatter bruising.

**Chip tests:** Potato chips are visually rated on a scale of 1 = very light to 10 = very dark, where 5 is considered just acceptable. After processing in December and February, from five storage temperatures, 11 entries had better average chip color than Monona (5.7): AF1668-60 (4.2), Snowden (4.7), CS7232-4 (5.0), ND860-2 (5.0), Andover (5.2), NY102 (5.2), Somerset (5.3), MaineChip (5.3), ATX85404-8U (5.5), NY103 (5.6), and Pike (5.7). All 20 selections and checks will be processed again in April from the same storage temperatures.

#### **Sensory quality evaluations:**

Baking tests are conducted by Alfred Bushway in the Food Sciences Department of the University of Maine. Of ten baked selections, panelists rated one (AF1291-113) better overall than Russet Burbank and one (MN15620) worse overall.

French fry quality comparisons were made from samples prepared in the Food Sciences pilot plant and evaluated at Aroostook Farm by Bart Bradbury (McCain Foods), Jonathan

Sisson, and Al Reeves. Of 12 selections tested, nine had significantly better color than Russet Burbank, and three had better texture than BelRus. The most outstanding lines were AF1718-1, ATX84706-2RU, and AF2055-1.



**Maine Breeding Table 1.** Performance of some round white selections grown at Presque Isle, Maine, 1999.

Variety	Color <sup>1</sup>	Shape <sup>2</sup>	Maturity <sup>3</sup>	Yield, US #1 <sup>4</sup>	Yield, Total	% US #1	Days <sup>5</sup>	Specific Gravity	Appearance <sup>6</sup>
AF1437-1	WN	R	E	370	376	98.4	91	1.070	4+
AF1470-6	W(N)	R	(M)E	446	452	98.5	91	1.064	4-
AF1565-12	W!	RO	E	326	341	95.2	91	1.075	3+
AF1569-2	CN	R	ME	373	382	97.6	91	1.080	4
AF1615-1	W	R	ME	453		98.2	103	1.085	3
AF1668-60	DC	R,fl	E	294	309	954	91	1.087	3+
AF1758-7	W(N)	R	ME	492	501	98.1	103	1.064	4
AF1763-2	CN	R(O)	(M)E	551	565	97.4	103	1.069	4+
AF1775-2	W(N)	R	M	470	475	98.9	103	1.083	3+
Superior	CN	R,fl	M(E)	316	321	98.2	91	1.083	3+
Kennebec	C	R	M(E)	272	286	94.9	91	1.072	3-
Katahdin	W	R,fl	M	379	386	98	103	1.077	3+

1. Color: W = white; N = netted; C = cream; () = slight.

2. Shape: R = round; O = oblong; fl = flat.

3. Maturity: M = medium; E = early; L = late.

4. Yield in hundred-weight per acre, over 1-7/8" diameter.

5. No. days from planting to top-kill (DAP); 91 DAP = 667 pdays; 103 DAP = 767 pdays.

6. Appearance ratings from 1 = very poor to 5 = excellent.

## Michigan Potato Variety Evaluations

D.S. Douches, R.W. Chase, K. Jastrzebski, R. Hammerschmidt, W. Kirk, C. Long, K. Walters, J. Coombs, and J. Greyerbiehl

The objectives of the evaluations are to identify superior varieties for fresh market or for processing and to develop recommendations for the growing of those varieties. The varieties were compared in groups according to the tuber type and skin color and to the advancement in selection. Each season, total and marketable yields, specific gravity, tuber appearance, incidence of external and internal defects, chip color (from field, 42° and 50°F storage), dormancy (at 50° F), as well as susceptibilities to late blight, common scab, Fusarium dry rot, Erwinia soft rot and blackspot bruising are determined.

Seven field experiments were conducted at the Montcalm Research Farm in Enniscorthy, MI. They were planted in a randomized complete block design with four replications. The plots were 23 feet long and spacing between plants was 12 inches. Inter-row spacing was 34 inches. Supplemental irrigation was applied as needed.

The round white tuber types were harvested at two dates (Date-of-Harvest trial). The other field experiments were the Russet, North Central Regional, European, Adaptation and Preliminary trials. In each of these trials the yield was graded into four size classes, incidence of external and internal defects in > 3.25 in. diameter or 10 oz. potatoes were recorded, and samples for specific gravity, chipping, dormancy, disease tests, bruising and cooking tests were taken. Chip quality was assessed on 25-tuber samples, taking two slices from each tuber. Chips were fried at 365°F. The color was measured visually with the SFA 1-5 color chart. Tuber samples were also stored at 42° and 50°F for chip-processing out of storage in January and March.

### Round White Varieties

Six varieties and 21 breeding lines were compared at two harvest dates. Atlantic, Snowden, Superior and Onaway were used as checks. The plot yields were below average in the early harvest (98 days), however, and a moderate yield increase was observed for the second harvest date (140 days). The low yields and early vine senescence were attributed to potato early die. Tuber specific gravity readings

were above average. The results are presented in Tables 1 and 2. In the early harvest trial NY112, E018-1, NY120, Atlantic and MSF313-3 had the highest yields of the 27 entries. At the later harvest MSE018-1, NY112, Atlantic and MSF313-3 were still the top yielders along with MSE228-1. NY112, Atlantic and MSE018-1 were also top yielders in the on-farm processing trials, while MSE228-1 was the top yielder in the on-farm tablestock trial. Internal brown spot and hollow heart incidence were low within the trial, however vascular discoloration was more prevalent as in 1998. NY112 was the only line with significant hollow heart in the oversize tubers.

**Variety characteristics.** *MSA091-1* – a MSU selection for chip-processing with strong scab resistance. Yields in 1999 were below average, but it has performed well in other states (Nebraska, Pennsylvania and California). The late blight trials indicate a reduced susceptibility to late blight. It is in the national SFA and the North Central regional trials. It is also in the CHIPS2001 program.

*MSE018-1* – a MSU chip-processing selection with high yield potential. It was an outstanding yielder in the MSU and on-farm trials the past three years. Specific gravity is high and it has a good general appearance. Scab tolerance is intermediate and it has a reduced susceptibility to late blight. This line was in the 1998 SFA Trials. Chip-processing has been variable in the on-farm trials.

*MSE149-5Y* – a MSU tablestock selection. It has high yield potential and produces attractive round tubers with a bright skin and light yellow flesh. It has been a top yielder in the on-farm trials. It chips out of 45°F cold storage, but has a low specific gravity. It has been transformed with the starch gene to raise the specific gravity. These transgenic lines will be field-tested in year 2000.

*MSE221-1* – a MSU tablestock selection. It has high yield potential as seen in the MSU and on-farm trials. General appearance is good, but it has a netted appearance similar to Superior. It has strong resistance to scab.

*MSE228-1* – a MSU tablestock selection. It has high yield potential as seen in the MSU trial and on-farm trials. It has a medium vine maturity, excellent internal quality and intermediate scab tolerance.

*MSE246-5* – a MSU chip-processing selection. It produces round tubers, has some scab tolerance along with reduced susceptibility to late blight. It also chip-processes from 45°F cold storage and has a very high specific gravity. In the 1999 on-farm trials, despite average yield potential, the chip quality was better than many of the other lines. It is a candidate for the CHIPS2002 program.

*MSF099-3* – a MSU chip-processing selection. It has high specific gravity, smooth attractive tubers, excellent chip quality and will chip-process from 45°F cold storage. It

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Douches is an associate professor, Chase is a professor emeritus, Jastrzebski is a visiting scholar, Long is a research technician, and Walters and Coombs are graduate assistants in the Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824. Hammerschmidt is a professor and Kirk is a visiting assistant professor in the Department of Botany and Plant Pathology, Michigan State University, East Lansing, MI 48824.

yielded well on the on-farm trials, but the large tubers tended to elongate. It is also scab susceptible. This line is in the CHIPS2001 program.

*MSF313-3* – a MSU tablestock and chip-processing selection. It has a medium vine maturity, above average yield potential. The tubers have few defects and the shape is smooth and round with a bright appearance. It will chip-process out of the field and from storage.

*MSG227-2* – a MSU chip-processing selection with strong scab resistance. It has a high specific gravity, excellent chip quality and cold-chipping potential. The tubers are smooth-shaped with a flattened round appearance that is attractive. This line is a candidate for CHIPS2002.

*MSG274-3* – a MSU tablestock selection. It has strong late blight resistance to US8, but is susceptible to scab. The line has high yield potential and a very high tuber set that can lead to a high percentage of B-size tubers. The tubers are oval with an attractive smooth shape and a bright skin. It has chipped out of the field and is in the CHIPS2001 program.

*MSNT-1* – an MSU chip-processing selection. It has above average yield potential, excellent chip quality and strong resistance to scab. Yield was below average in the MSU trial. It was in the 1998 and 1999 SFA trials along with the on-farm trials. It performed well in Ontario trials in 1999. It is in the CHIPS2001 program.

*NY112* – a Cornell University chip-processing selection. It has high yield potential and was the top yielder in the 1998 SFA trials. The specific gravity is in the range of 1.080 or lower. Blackspot bruise has been observed in simulated bruise tests in the past two years.

*Chipeta* – a chip-processing variety released in 1993. It is a high yielding line with a moderate specific gravity. The vine is strong. Scab resistance is intermediate.

### Long Varieties

Three varieties and seven breeding lines were tested in 1999. Russet Burbank and Russet Norkotah were grown as check varieties. The trial was dug at 122 days from planting and results are shown in Table 3. Early die was present in the trial resulting in early vine senescence and low yield. All specific gravity levels were below normal with Russet Burbank at 1.069. Within the 10 entries MSG088-6RUS, MSE202-3RUS and MSH026-3RUS produced the highest yields.

**Variety characteristics.** *A7961-1* – is an USDA-Aberdeen entry with good performance. It has uniform appearance, heavier russetting than Russet Burbank and minimal internal defects. It can be used for frozen-processing. It will be named in the Northwest.

*Innovator* – a European selection that has attractive russetting and produces excellent fry color, but has a low specific gravity.

*MSB106-7* – a MSU tablestock selection. It has high yield potential as seen in the on-farm trials, but performed poorly at MSU. Tubers are oblong-long with a light netting. In 1999 it was the top yielder in Nebraska.

*MSE192-8RUS* – a MSU tablestock selection. The tubers have an attractive russetting and shape. The yield in on-farm trials have been disappointing, but performed well in some on-farm trials in 1999. The vine is small which may make this line uncompetitive in small plot trials.

*MSE202-3RUS* – a MSU dual purpose russet selection. It has a medium maturity and above average yield potential. Its specific gravity is equivalent to Russet Burbank and the tubers are long with an attractive russet skin. Scab resistance is also high.

### North Central Regional Trial

The North Central Trial is conducted in a wide range of environments (10 states) to provide adaptability data for the release of new varieties from North Dakota, Minnesota, Wisconsin, Michigan and Canada. Nineteen breeding lines and seven varieties were tested in Michigan. The results are presented in Table 4. Like all the other trials, potato early die influenced the trials, making it hard to judge the yield potential of these lines. The range of yields was wide and the specific gravity was average. The MSU selections MSE018-1 and MSB107-1 performed well. The line ND2470-27 performed well as a chip-processing selection. The MSU line MSA091-1 performed well in the Nebraska trials, despite low yields at MSU. The red-skinned North Dakota line, ND5084-3R, had high yield and excellent red color, but it has a very late maturity and severely sticky stolons.

### European/Yellow Trial

Fourteen European varieties and advanced selections were tested along with six yellow-fleshed MSU seedlings. Yukon Gold and Saginaw Gold were used as checks. The results are summarized in Table 5. Typically, most of the European selections and varieties tend to be late to very-late in maturity, but the vines senesced early and we observed a high percentage of 'B' size tubers. The yields were below average and varied considerably. The best performing lines in 1999 were Columbo, MSE048-2Y and Sierra. Victoria and Gigant had severely late vine senescence. Bolestra shows chip-processing potential, while Lady Claire made excellent chips despite low yields. Yukon Gold, MSE048-2Y and MSG145-1Y had the best percentage of marketable tubers. Hollow heart was noted in the oversize tubers of MSG145-1Y and MSE048-2Y. The selection MSE040-6RY is a yellow-fleshed selection with a red skin color equivalent



to Chieftain. MSA097-1Y performed below average compare to other years, but should be noted for its scab resistance.

### Adaptation Trial

Nine varieties and 37 advanced breeding lines were evaluated in the Adaptation trial (Table 6). The trial was harvested after 141 days, but potato early die led to early vine senescence in late August in most cases. The highest yielding lines were MSE028-1 (tablestock), MSE273-8 (chip-processing) and MSG124-8P (blue-fleshed chip-processor). MSE028-1 has a bright skin and scab tolerance, while MSE273-8 has susceptibility to scab. IdaRose is a late maturing, red-skinned variety with promise. MSH333-3 and MSH031-5 show promise and note that MSH031-5 has an attractive bright skin and smooth appearance along with chip-processing potential. Other lines worth noting include Michigan Purple (attractive purple skin and white flesh), MSG147-3P (blue-fleshed chip-processor), MSG004-3 (bruise resistant tablestock), and MSG015-C (scab-resistant chip-processor).

### Preliminary Trial

The Preliminary trial, harvested at 122 days, is the first replicated trial for evaluated new advanced selections from the MSU potato breeding program. Potato early die was a factor in this trial too. Sixty advanced selections were tested, but some were dropped from Table 7 because of poor tuber qualities noted at harvest and grading. MSF373-8 shows the highest yield potential with a high percentage of oversize tubers. It has excellent internal quality, some scab tolerance and will chip-process, but has medium-deep eyes. Other promising chip-processing lines include MSI172-7, MSH017-C, MSI103-5, MSI002-3, MSI117-1 and MSH067-3. MSI03-5 and MSH067-3 are both scab tolerant too. Other tablestock selections with promise include MSI053-2, MSI005-20Y, MSG106-5 and MS178-8.

### Potato Scab Evaluation

Each year a replicated field trial at the MSU Soils Farm is conducted to assess resistance to common and pitted scab. The varieties are ranked on a 1-5 scale based upon a combined score for scab coverage and lesion severity. Usually examining one year's data does not indicate which varieties are resistant but it should begin to identify ones that can be classified as susceptible to scab. Our goal is to evaluate important advanced selections and varieties in the study at least three years to obtain a valid estimate of the level of resistance in each line. Table 8A categorizes many of the varieties and advanced selections tested in 1999 at the MSU Soils Farm Scab Nursery. This disease trial is a severe test. The varieties and lines are placed into five arbitrary categories based upon scab infection level and lesion severity. A rating of 1.0 indicates zero to a trace amount of infection. A moderate resistance (1.2 – 1.8) correlates with

<10% infection. These two categories are good levels of scab tolerance. Susceptible lines have greater than 25% infection with pitted lesions. Scores of 4.0 or greater are found on lines with >50% infection and severe pitted lesions. The check varieties Russet Burbank, Superior, Onaway, Red Pontiac, Yukon Gold, Atlantic and Snowden can be used as references (bolded in Table 8). Scab results are also found in the Trial Summaries (Tables 2,3,4, 5, 6 and 7). Table 8B summarizes the 1997-9 scab trial results for the varieties and lines that have been tested at least two years in the past four years. These multi-year results give a more stable rating score for the clones tested in these trials.

### Late Blight Trial

In 1999 a late blight trial was conducted at the Muck Soils Research Farm. Over 170 entries were evaluated in replicated plots. The field was inoculated late-July and ratings were taken during August. Most lines were highly susceptible to the US-8 genotype of late blight. Lines with the least infection were LBR8, LBR9, AWN86514-1, B0718-3, NY121 (Q237-25), MSG274-3 and Torridon (a Scottish variety). The good agronomic and tuber qualities of MSG274-3 make this selection the strongest late blight resistant line a candidate for commercialization. Lines with reduced susceptibility to late blight are Umatilla Russet, Legend Russet (C0083008-1), B9922-11, MSG124-8P and MSA091-1. Foliar susceptibility of all the lines tested against the US-8 genotype of late blight is summarized in Table 9.

### Blackspot Susceptibility

Increased evaluations of advanced seedlings and new varieties for their susceptibility to blackspot bruising has been implemented in the variety evaluation program. Check samples of 25 tubers were collected (a composite of 4 reps) from each cultivar at the time of grading. A second 25 tuber sample was similarly collected, placed in 50°F storage overnight and then was placed in a hexagon plywood drum and tumbled 10 times to provide a simulated bruise. Both samples were peeled in an abrasive peeler in October and individual tubers were assessed for the number of blackspot bruises on each potato. These data are shown in Tables 10A and 10B. Table 10A summarizes the data for the samples receiving the simulated bruise and Table 10B, the check samples. The bruise data are represented in two ways: percentage of bruise free potatoes and average number of bruises per tuber. A high percentage of bruise-free potatoes is the desired goal; however, the numbers of blackspot bruises per potato is also important. Cultivars which show blackspot incidence greater than Atlantic are approaching the bruise-susceptible rating. In addition, the data is grouped by trial, since the bruise levels can vary between trials. We are also hoping the uniform tuber temperature prior to bruising may help reduce variability observed in previous years. These results become more meaningful when evaluated over 3 years which reflects different growing

seasons and harvest conditions. The data indicates that bruise levels were average compared to other years. The most bruise resistant lines were MSE228-1, A7961-1, MSE192-8RUS, ND3574-5R, MSG145-1Y, MSG147-3P, MSI178-8 and MSF015-1.

#### **Post-harvest Disease Evaluation: Fusarium Dry Rot**

As part of the postharvest evaluation, resistance to *Fusarium sambucinum* (fusarium dry rot) was assessed by inoculating 8 whole tubers post-harvest from each line in the variety trials. The tubers were held at 20°C for approximately three weeks and then scored for dry rot infection depth and width. These data are summarized in Table 11. The clones in this table are ranked according to infection depth. Infection levels within a clone can vary as seen by the multiple tests of the check varieties. Snowden, which has tolerance to fusarium, had infections from 3.4-6.0 mm in depth. Russet Burbank infections ranged from 4.5- 5.9 mm, while Atlantic infections were from 6.3-16.6 mm. No clones showed immunity to dry rot, however, some lines show tolerance at levels equivalent to Russet Norkotah, Snowden and Superior. Some key lines with identified tolerance are MSH106-2, MSG004-3, P83-11-5, MSH031-5, MSE018-1, NY112, MSE202-3RUS, MSG227-2, MSF313-3, and MSG145-1Y.

Michigan Table 1. Round Whites: Early Harvest, Montcalm Research Farm, August 9, 1999 (98 Days)

LINE	CWT/A		PERCENT OF TOTAL <sup>1</sup>							TUBER QUALITY <sup>2</sup>				TOTAL CUT	3-YR AVG US#1 CWT/A
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	SFA†	HH	VD	IBS	BC	
NY112	332	371	89	11	85	5	0	1.083	1.0	5	1	0	0	40	435*
MSE018-1	315	391	81	19	77	3	0	1.087	1.0	2	3	0	0	40	256
NY120	272	301	90	8	83	7	2	1.083	1.0	0	11	0	0	40	-
ATLANTIC	267	319	84	13	73	11	3	1.091	1.0	12	0	0	0	40	259
MSF313-3	262	310	85	14	78	6	1	1.081	1.0	2	1	0	0	40	-
MSF014-9	235	295	80	20	79	1	1	1.074	1.0	1	0	0	0	40	-
CHIPETA	231	265	87	11	82	5	2	1.075	1.0	3	0	0	0	40	-
MSG050-2	230	298	77	21	76	1	2	1.070	-	0	0	1	0	40	-
MSE228-1	230	324	71	29	70	1	0	1.080	-	0	0	0	0	40	306*
MSE221-1	229	300	76	13	71	5	11	1.071	-	0	1	1	0	40	274
ONAWAY	222	303	73	24	73	1	3	1.064	-	0	4	0	0	40	222
REBA	220	263	84	14	81	2	2	1.075	1.0	0	0	0	0	40	151*
MSE228-11	218	343	64	36	64	0	0	1.084	-	0	2	0	0	40	177
NY115	212	270	78	21	70	8	0	1.075	1.0	0	0	0	0	40	270*
MSNT-1	200	267	75	24	75	0	0	1.088	1.0	0	0	0	0	40	198
MSE149-5Y	197	262	75	23	72	3	1	1.066	1.0	0	1	0	0	40	267*
MSG227-2	190	284	67	30	66	0	4	1.084	1.0	0	0	0	0	40	-
MSF099-3	183	274	67	31	65	2	2	1.092	1.0	2	0	0	0	40	295*
MSE246-5	183	254	72	27	72	0	1	1.093	1.0	0	0	0	0	40	223*
SNOWDEN	180	252	71	28	70	1	1	1.084	1.0	1	7	0	0	40	191
P83-11-5	174	264	66	31	65	1	2	1.085	1.0	2	1	0	0	40	-
SUPERIOR	172	219	78	20	78	0	1	1.070	-	1	9	0	1	40	-
MSA091-1	168	239	70	28	70	0	2	1.082	1.0	0	3	0	0	40	184
MSB076-2	164	283	58	40	58	0	2	1.081	1.0	0	1	0	0	40	176
MSC148-A	144	272	53	47	53	0	0	1.087	1.0	0	1	0	0	40	152
MSE250-2	124	198	62	36	62	0	1	1.090	1.0	0	0	0	0	40	160*
MSG274-3	89	340	26	73	26	0	1	1.081	1.0	0	0	0	0	40	-
MEAN	209	287						1.081							
LSD <sub>0.05</sub>	34	33						0.003							

<sup>1</sup>Size

B: < 2"  
A: 2 - 3.25"  
OV: > 3.25"  
PO: Pickouts

<sup>2</sup>Quality

HH: Hollow Heart  
BC: Brown Center  
VD: Vascular Discoloration  
IBS: Internal Brown Spot

†Snack Food Association Chip Score

Out of the Field  
Ratings: 1 - 5  
1: Excellent  
5: Poor

\* Two-year Average  
Planted May 3, 1999



Michigan Table 2. Round Whites: Late Harvest, Montcalm Research Farm, September 20, 1999 (140 Days)

	CWT/A		PERCENT OF TOTAL <sup>1</sup>							TUBER QUALITY <sup>2</sup>						TOTAL		3-YR AVG
LINE	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	SFA†	HH	VD	IBS	BC	CUT	SCAB <sup>3</sup>	MAT <sup>4</sup>	US#1 CWT/A
MSE018-1	386	449	86	13	81	6	1	1.089	2.0	8	6	0	0	40	3.0	5.0	363	
NY112	385	422	91	9	80	12	0	1.079	1.5	16	2	1	0	40	1.5	3.5	448*	
ATLANTIC	324	374	87	11	76	11	3	1.090	1.5	5	3	1	1	40	3.0	2.5	312	
MSE228-1	321	405	79	19	75	4	2	1.070	-	0	4	0	0	40	3.0	3.0	339*	
MSF313-3	318	370	86	12	75	11	2	1.077	1.5	0	5	0	0	40	2.7	3.5	-	
CHIPETA	296	353	84	10	75	9	6	1.073	1.5	5	6	0	0	40	2.3	4.5	-	
NY120	284	312	91	6	81	11	3	1.078	2.0	0	22	0	0	40	1.3	3.0	-	
MSG050-2	283	332	85	14	78	7	1	1.069	-	0	2	1	0	40	2.0	2.0	-	
MSE228-11	279	387	72	27	71	1	1	1.082	2.0	0	2	0	0	40	3.0	4.0	245	
REBA	254	301	85	14	78	6	1	1.073	1.0	2	5	0	0	40	2.0	3.0	219*	
MSF014-9	253	311	81	18	77	4	0	1.072	1.5	0	0	0	0	40	3.0	3.0	-	
SNOWDEN	247	314	79	21	74	4	1	1.080	1.5	0	8	0	1	40	3.0	3.0	241	
ONAWAY	245	315	78	17	77	1	6	1.062	-	0	9	0	0	40	1.2	1.5	236	
NY115	244	310	79	21	74	5	1	1.074	1.5	0	2	0	0	40	1.5	2.0	301*	
MSE149-5Y	240	298	81	18	78	3	1	1.062	1.5	0	0	0	0	40	2.0	2.0	304*	
MSE221-1	240	295	82	9	73	9	10	1.067	-	0	3	0	0	40	1.2	1.5	274	
MSG227-2	236	321	73	23	72	1	3	1.080	1.5	1	0	0	0	40	1.1	3.5	-	
MSF099-3	230	314	73	25	72	1	2	1.086	1.5	0	1	0	0	40	2.7	3.0	307*	
SUPERIOR	228	277	82	16	81	1	2	1.069	-	0	12	0	0	40	1.0	1.0	-	
MSNT-1	228	296	77	22	75	2	1	1.084	1.0	1	1	0	0	40	1.5	3.0	211	
MSE246-5	218	285	76	22	74	2	1	1.090	1.0	1	9	0	0	40	2.0	3.0	262*	
P83-11-5	201	313	64	32	64	1	4	1.082	1.0	0	5	1	1	40	1.7	2.5	-	
MSA091-1	197	273	72	22	72	0	6	1.080	1.0	0	6	1	0	40	1.0	2.5	221	
MSG274-3	178	409	44	55	43	0	1	1.079	1.5	0	0	0	0	40	3.5	4.0	-	
MSB076-2	170	283	60	39	60	0	1	1.078	2.0	0	0	0	0	40	1.5	1.5	193	
MSE250-2	159	238	67	29	67	0	4	1.090	1.5	3	0	0	0	40	2.3	4.5	194*	
MSC148-A	148	264	56	43	56	0	1	1.084	1.0	0	0	0	0	40	2.5	1.0	166	
MEAN	252	327						1.078										
LSD <sub>0.05</sub>	46	42						0.002										

<sup>1</sup> Size

B: &lt; 2"

A: 2 - 3.25"

OV: &gt; 3.25"

PO: Pickouts

<sup>2</sup> Quality

HH: Hollow Heart

BC: Brown Center

VD: Vascular Discoloration

IBS: Internal Brown Spot

<sup>3</sup> Scab Disease Rating

(From MSU Scab Nursery)

1: No Infection

3: Intermediate

5: Highly Susceptible

<sup>4</sup> Maturity Rating

Ratings: 1 - 5

1: Early

5: Late

\* Two-year Average

Planted May 3, 1999

†Snack Food Association Chip Score

Out of the Field

Ratings: 1 - 5

1: Excellent

5: Poor

Michigan Table 3. Long Whites and Russets, Montcalm Research Farm, September 2, 1999 (122 Days).

LINE	CWT/A		PERCENT OF TOTAL <sup>1</sup>							TUBER QUALITY <sup>2</sup>				TOTAL CUT	SCAB <sup>3</sup>	MAT <sup>4</sup>	3-YR AVG US#1 CWT/A
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	HH	VD	IBS	BC				
MSG088-6RUS	276	369	75	22	69	6	3	1.068		0	5	0	0	40	2.0	3.5	343*
MSE202-3RUS	206	295	70	27	65	5	3	1.074		1	2	0	0	40	1.2	3.5	173*
MSH026-3RUS	204	320	64	36	62	1	1	1.071		1	2	0	0	40	1.5	2.0	-
MSB106-7	197	311	63	32	60	4	5	1.060		0	3	0	0	40	1.3	1.5	175
INNOVATOR	173	288	60	35	56	4	5	1.069		0	1	0	0	40	3.0	3.0	232*
A7961-1	141	267	53	45	52	1	3	1.075		5	7	0	0	30	1.0	3.5	209
ND4093-4RUS	116	245	47	52	47	1	1	1.068		2	0	0	0	30	1.3	1.5	-
MSE192-8RUS	102	255	40	56	38	2	4	1.065		0	2	0	0	20	1.2	1.5	164*
RUSSET NORKOTAH	99	223	44	55	44	1	1	1.064		0	1	0	0	10	2.0	1.0	153*
RUSSET BURBANK	83	242	34	59	34	0	7	1.069		0	0	0	0	10	1.0	2.5	157
MEAN	160	282						1.068									
LSD <sub>0.05</sub>	49	47						0.002									

<sup>1</sup> Size

B: < 4 oz  
A: 4 - 10 oz.  
OV: > 10 oz.  
PO: Pickouts

<sup>2</sup> Quality

HH: Hollow Heart  
BC: Brown Center  
VD: Vascular Discoloration  
IBS: Internal Brown Spot

<sup>3</sup> Scab Disease Rating

(From MSU Scab Nursery)  
1: No Infection  
3: Intermediate  
5: Highly Susceptable

<sup>4</sup> Maturity Rating

Ratings: 1 - 5  
1: Early  
5: Late

\* Two-year Average  
Planted May 3, 1999

Michigan Table 4. North Central Regional Trial, Montcalm Research Farm, September 7, 1999 (127 Days)

LINE	CWT/A		PERCENT OF TOTAL <sup>1</sup>							TUBER QUALITY <sup>2</sup>					TOTAL	
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP GR	SFA†	HH	VD	IBS	BC	CUT	SCAB <sup>3</sup>	MAT <sup>4</sup>
ND5084-3R	422	469	90	7	53	37	3	1.056	2.5	1	5	1	0	40	1.8	4.0
SNOWDEN	371	411	90	9	87	3	1	1.087	1.5	2	26	0	0	40	3.0	4.5
RED PONTIAC	359	421	85	13	82	4	2	1.060	3.0	1	8	0	0	40	3.8	4.0
ATLANTIC	351	400	88	11	83	4	1	1.091	1.5	11	6	1	0	40	3.0	3.5
MSE018-1	346	425	82	16	78	4	3	1.084	1.5	1	12	0	0	40	3.0	5.0
ND2470-27	326	399	82	15	79	2	3	1.077	1.0	0	14	0	0	40	2.5	3.0
MSB107-1	318	352	90	7	84	6	3	1.074	1.5	0	9	2	0	40	1.5	4.0
FV8957-10	280	332	84	12	82	3	3	1.070	1.0	4	15	0	0	40	4.0	3.0
W1148R	261	323	81	18	79	2	1	1.069	2.0	0	12	0	0	40	1.3	2.5
NORLAND	255	325	79	19	78	1	2	1.056	2.5	1	7	0	0	40	-	1.0
ND3574-5R	255	322	79	20	79	0	1	1.053	3.0	0	4	0	0	40	2.0	1.0
MN16966	250	375	67	30	63	4	3	1.078	1.5	0	9	1	2	40	2.5	4.0
MN17922	236	261	90	8	74	16	2	1.057	3.0	0	15	0	0	40	-	3.0
MSE263-10	218	271	80	19	80	0	1	1.073	1.5	0	8	0	0	40	-	2.0
MSA091-1	215	294	73	22	73	0	5	1.079	2.0	0	7	0	0	40	1.0	3.0
W1355-1	212	315	67	32	67	0	0	1.080	1.0	0	7	0	0	40	2.8	3.5
WIS75-30	205	337	61	37	61	0	2	1.074	1.5	0	4	0	0	40	2.0	2.0
NORVALLEY	196	323	61	36	60	1	4	1.072	1.5	0	2	0	0	40	-	2.5
MN18713	183	305	60	38	55	5	2	1.082	1.5	0	8	0	0	40	1.0	3.0
FV9649-6	161	280	57	40	52	6	2	1.062	2.5	2	0	1	0	40	3.0	2.0
ND4093-4RUSS	151	295	51	47	49	2	2	1.068	2.5	3	0	0	0	40	1.3	1.0
W1348RUS	146	280	52	45	52	0	2	1.073	1.5	3	1	0	0	30	1.0	3.0
RUSSET BURBANK	129	261	50	40	49	0	10	1.068	2.0	0	4	0	0	30	1.0	3.5
ND2937-3	126	286	44	39	44	0	16	1.060	2.5	0	0	0	0	30	4.0	1.0
RUSSET NORKOTAH	99	208	48	52	45	3	0	1.063	2.0	1	1	0	0	10	2.0	1.0
MN18153	62	168	37	62	36	1	1	1.062	2.0	0	0	0	0	0	-	1.5
MEAN	236	325						1.070								
LSD <sub>0.05</sub>	50	49						0.003								

<sup>1</sup> Size

B: &lt; 2"

A: 2 - 3.25"

OV: &gt; 3.25"

PO: Pickouts

<sup>2</sup> Quality

HH: Hollow Heart

BC: Brown Center

VD: Vascular Discoloration

IBS: Internal Brown Spot

<sup>3</sup> Scab Disease Rating

(From MSU Scab Nursery)

1: No Infection

3: Intermediate

5: Highly Susceptible

<sup>4</sup> Maturity Rating

Ratings: 1 - 5

1: Early

5: Late

\* Two-year Average

Planted May 3, 1999

## †Snack Food Association Chip Score

Out of the Field

Ratings: 1 - 5

1: Excellent

5: Poor

**Michigan Table 5.** Yellow Flesh and European Trial, Montcalm Research Farm, September 13, 1999 (133 Days).

LINE	CWT/A		PERCENT OF TOTAL <sup>1</sup>								TUBER QUALITY <sup>2</sup>				TOTAL		
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	SFA†	HH	VD	IBS	BC	CUT	SCAB <sup>3</sup>	MAT <sup>4</sup>
COLUMBO	304	444	69	30	67	1	1	1.065	2.0	0	0	0	0	0	40	3.2	3.0
ACCENT	278	426	65	26	64	1	9	1.060	4.5	0	12	1	0	0	40	2.0	3.0
MSE048-2Y	277	343	81	16	78	3	3	1.072	-	7	0	0	0	0	40	2.0	3.0
SIERRA	270	359	75	21	69	6	4	1.063	3.5	2	11	1	0	0	40	2.3	3.5
MSE222-5Y	255	376	68	26	65	3	6	1.075	-	2	0	0	0	0	40	2.7	2.5
GIGANT	244	343	71	24	70	1	5	1.082	-	0	3	12	0	0	40	2.5	5.0
YUKON GOLD	242	279	87	12	77	10	1	1.074	-	2	3	0	0	0	40	2.5	2.0
MSG145-1Y	212	278	76	22	75	1	2	1.070	-	14	0	1	0	0	40	2.0	1.5
BOLESTRA	207	334	62	34	62	0	5	1.084	1.0	0	6	0	0	0	40	3.0	5.0
MSE226-4Y	205	326	63	35	61	2	2	1.066	-	0	1	0	0	0	40	1.1	2.0
ELOGE	187	328	57	41	56	1	2	1.066	3.0	0	0	6	0	0	40	4.0	2.0
VICTORIA	184	339	54	40	54	0	5	1.076	-	0	20	0	0	0	40	2.0	5.0
TORRIDON	170	358	48	48	47	0	5	1.090	1.5	0	5	2	0	0	40	4.0	4.5
SAGINAW GOLD	166	285	58	37	58	0	4	1.073	-	3	2	0	0	0	40	1.3	1.0
ACCORD	151	322	47	51	47	0	2	1.080	2.0	0	0	2	0	0	40	2.3	2.5
MSA097-1Y	144	260	55	44	54	2	1	1.074	2.5	0	0	0	0	0	40	1.0	1.5
MSE040-6RY	140	318	44	55	43	0	1	1.068	-	0	2	0	0	0	40	2.0	1.5
APELL	109	297	37	56	37	0	7	1.064	3.0	0	1	0	0	0	30	2.7	3.0
MATILDA	107	349	31	68	31	0	1	1.082	-	0	4	0	0	0	10	2.8	4.0
ZAREVO	95	195	49	35	47	2	16	1.086	-	7	3	3	0	0	30	2.8	4.0
SW93107	91	258	35	61	35	0	4	1.079	3.0	0	1	0	0	0	20	1.8	4.0
LADY CLAIRE	62	253	25	75	25	0	0	1.077	1.0	0	0	0	0	0	0	2.0	1.5
MEAN	186	321						1.074									
LSD <sub>0.05</sub>	47	37						0.003									

<sup>1</sup> Size	<sup>2</sup> Quality	<sup>3</sup> Scab Disease Rating	<sup>4</sup> Maturity Rating
B: < 2"	HH: Hollow Heart	(From MSU Scab Nursery)	Ratings: 1 - 5
A: 2 - 3.25"	BC: Brown Center	1: No Infection	1: Early
OV: > 3.25"	VD: Vascular Discoloration	3: Intermediate	5: Late
PO: Pickouts	IBS: Internal Brown Spot	5: Highly Susceptible	

Planted May 3, 1999

†Snack Food Association Chip Score  
Out of the Field  
Ratings: 1 - 5  
1: Excellent  
5: Poor

Michigan Table 6. Adaptation Trial, Montcalm Research Farm, September 21, 1999 (141 Days).

LINE	CWT/A		PERCENT OF TOTAL <sup>1</sup>							TUBER QUALITY <sup>2</sup>				TOTAL			
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	SFA†	HH	VD	IBS	BC	CUT	SCAB <sup>3</sup>	MAT <sup>4</sup>
MSE028-1	388	470	83	14	80	3	4	1.079	-	0	11	3	0	40	1.0	4.5	
MSE273-8	363	409	89	10	77	12	1	1.073	2.0	6	5	2	0	40	4.5	3.5	
MSG124-8P	362	381	95	4	71	24	1	1.071	2.0	13	0	0	0	40	1.3	5.0	
IDA ROSE	338	377	90	9	77	13	1	1.070	-	1	1	3	0	40	1.3	5.0	
MSH333-3	328	376	87	10	82	5	3	1.077	2.0	0	1	0	0	40	3.3	3.5	
MSH031-5	322	401	80	19	79	2	0	1.081	1.5	0	1	0	0	40	2.0	3.0	
MSF001-2	309	363	85	14	82	3	1	1.070	1.5	0	1	0	0	40	3.5	3.5	
MSG049-4	307	341	90	5	77	13	5	1.069	-	6	4	0	2	40	3.3	2.0	
MSH041-1	306	377	81	15	75	6	4	1.070	1.0	5	3	0	0	40	2.3	3.0	
ATLANTIC	303	359	84	13	79	5	2	1.088	1.0	6	0	1	2	40	3.0	3.5	
MSF060-6	298	345	86	14	85	1	0	1.084	2.0	0	3	5	0	40	-	4.0	
MSH101-2	293	342	86	14	80	6	1	1.078	2.0	1	4	1	0	40	3.0	3.0	
MICHIGAN PURPLE	288	344	84	16	77	7	0	1.071	-	0	6	0	0	40	3.0	3.0	
MSH106-2	279	328	85	15	77	8	0	1.093	1.5	2	4	6	6	40	1.0	4.0	
MSG147-3P	278	340	82	17	79	3	1	1.066	1.5	0	0	0	0	40	2.5	4.0	
MSG004-3	268	307	87	12	81	7	1	1.066	-	0	0	0	0	40	3.0	3.5	
MSG015-C	264	364	73	27	71	2	0	1.079	1.5	0	4	1	0	40	1.2	4.0	
ROCKET	259	358	73	25	71	2	3	1.074	-	2	3	0	0	40	2.3	2.5	
MSG007-1	256	316	81	18	80	1	0	1.094	1.0	0	1	1	0	40	1.8	3.0	
ONAWAY	254	324	78	19	75	3	2	1.063	-	0	8	0	0	40	1.2	2.0	
SNOWDEN	248	317	78	21	76	3	1	1.080	1.5	1	11	0	0	40	3.0	3.0	
NAVAN	243	327	74	22	61	13	4	1.082	2.5	18	3	13	0	40	2.8	5.0	
MSH098-2	241	316	76	10	70	7	14	1.085	1.5	0	0	0	0	30	2.5	3.5	
MSH018-5	237	397	60	38	59	1	2	1.088	1.0	0	2	1	0	40	2.5	3.5	
MIDAS	234	403	58	23	58	0	19	1.081	1.5	0	7	0	0	40	1.3	5.0	
MSH217-1	234	309	76	23	73	2	2	1.086	1.5	6	2	1	0	40	3.3	4.5	
SAXON	229	330	69	29	69	1	2	1.057	-	1	2	1	0	40	1.8	2.5	
MSH384-1Y	227	336	67	30	67	0	3	1.080	3.0	0	10	0	0	40	3.8	3.0	
MSI201-2PY	225	385	58	39	58	1	3	1.073	-	0	0	0	0	40	3.5	4.0	
MSF002-1	224	285	78	22	78	1	0	1.070	2.0	0	2	0	0	40	3.3	3.0	
MSH123-5	222	289	77	23	73	4	0	1.083	1.5	0	10	0	0	40	1.5	4.0	
MSG141-1	220	291	75	23	75	0	2	1.089	1.5	0	1	0	0	40	1.7	2.5	
MSH094-8	219	298	74	23	73	1	3	1.080	1.0	1	2	2	0	40	2.5	3.0	
MSH380-3Y	215	287	75	23	74	1	2	1.084	2.0	2	1	0	0	40	3.0	3.0	
MSH228-6	212	270	79	19	75	4	3	1.076	1.5	2	4	2	0	40	1.5	4.0	
MSH015-2	205	285	72	18	70	2	10	1.088	1.5	0	1	0	0	40	1.5	2.0	
SUPERIOR	200	247	81	18	79	2	1	1.071	-	0	5	0	1	40	1.0	1.5	
MSH095-4	199	256	78	19	74	4	3	1.077	1.0	3	8	0	0	40	2.0	2.5	
MSH419-1	185	253	69	29	67	2	3	1.087	1.5	2	3	0	0	40	3.0	3.0	
MSH321-1	166	311	53	42	53	1	5	1.079	2.0	1	1	0	0	30	-	3.0	
MSF087-3RUS	164	319	51	47	50	2	1	1.080	-	3	0	0	0	40	1.0	2.0	
MSH120-1	153	281	54	43	54	0	3	1.080	2.0	0	4	1	2	30	1.2	3.0	
MSH418-1	147	234	63	36	62	1	1	1.092	1.5	2	0	1	0	30	2.5	3.0	
MSH370-3	145	232	63	32	60	3	5	1.076	1.0	1	3	0	1	40	2.0	2.0	
MSH361-2	102	266	38	58	38	0	4	1.086	2.0	0	0	0	0	0	1.0	2.0	
NY121	74	233	32	68	32	0	0	1.077	-	0	0	0	0	0	1.0	2.0	
MEAN	244	326						1.078									
LSD <sub>0.05</sub>	55	53						0.003									

<sup>1</sup> Size

B: &lt; 2"

A: 2 - 3.25"

OV: &gt; 3.25"

PO: Pickouts

<sup>2</sup> Quality

HH: Hollow Heart

BC: Brown Center

VD: Vascular Discoloration

IBS: Internal Brown Spot

<sup>3</sup> Scab Disease Rating

(From MSU Scab Nursery)

1: No Infection

3: Intermediate

5: Highly Susceptable

<sup>4</sup> Maturity Rating

Ratings: 1 - 5

1: Early

5: Late

Planted May 3, 1999

## †Snack Food Association Chip Score

Out of the Field

Ratings: 1 - 5

1: Excellent 5: Poor



Michigan Table 7. Preliminary Trial, Montcalm Research Farm, September 2, 1999 (122 Days).

LINE	CWT/A		PERCENT OF TOTAL <sup>1</sup>						TUBER QUALITY <sup>2</sup>						TOTAL		PEDIGREE	SCAB <sup>3</sup>	MAT
	US#1	TOTAL	US#1	Bs	As	OV	PO	SP	GR	SFA†	HH	VD	IBS	BC	CUT				
MSF373-8	401	424	95	5	73	22	1	1.083	1.5	0	0	0	0	0	20		MS702-80 X NY88	1.7	5.0
MSI172-7	392	435	90	8	80	11	1	1.071	1.5	1	2	0	0	0	20		NORVALLEY X F191-9	4.3	4.0
MSI077-5	363	398	91	8	82	9	0	1.076	3.5	0	1	0	0	0	20		C084-1 X W870	4.0	4.0
MSH017-C	351	381	92	7	84	8	1	1.085	1.5	1	3	0	0	0	20		ATL X NOVACHIP	3.0	2.5
MSI103-5	333	409	82	16	79	3	3	1.079	1.0	0	0	3	0	0	20		E149-5Y X LEMHI	1.0	4.5
MSI002-3	320	380	84	15	82	2	1	1.082	1.0	3	0	0	0	0	20		A091-1 X F134-1	4.3	2.0
MSH063-A	316	392	81	18	79	1	1	1.074	1.0	0	1	1	0	0	20		C121-7 X C086-7	2.0	3.0
MSI117-1	315	370	85	11	79	6	4	1.080	1.5	0	5	0	0	0	20		PIKE X ND860-2	1.0	3.0
MSI053-2	311	340	91	8	87	5	0	1.077	2.5	0	0	0	0	0	20		BRODICK X E234-3	2.0	3.0
ATLANTIC	309	374	83	14	79	4	4	1.089	1.0	2	0	0	0	0	20			3.0	3.0
MSH067-3	308	335	92	6	77	15	2	1.085	1.5	4	3	1	0	0	20		C127-3 X W877	1.8	2.5
MSI005-20Y	306	403	76	23	74	2	1	1.073	2.5	0	1	0	0	0	20		A097-1Y X PENTA	1.8	3.0
MSI050-4	304	393	77	22	76	2	1	1.083	1.0	1	0	0	0	0	20		BRODICK X C127-3	2.5	3.0
MSG106-5	302	341	88	11	73	16	1	1.067	2.5	3	1	0	1	0	20		PRESTILE X L235-4	2.3	2.0
MSH013-A	299	374	80	15	80	0	5	1.076	1.5	0	3	0	0	0	20		ATL X C135-2	2.0	1.5
MSH306-B	297	353	84	12	84	1	4	1.094	1.5	3	6	0	0	0	20		ATL X F077-8	2.7	3.0
MSI178-8	292	343	85	14	84	1	1	1.072	2.5	3	2	0	1	0	20		NY101 X CHALEUR	1.7	3.5
MSI057-1	289	391	74	24	74	0	2	1.080	1.0	5	1	0	0	0	20		BRODICK X F090-1	4.0	3.0
B1865-2	281	345	82	14	76	6	4	1.069	2.0	0	1	1	0	0	20			3.7	4.0
SNOWDEN	279	346	81	19	77	4	1	1.083	1.0	1	4	0	0	0	20			3.0	3.0
MSI004-2Y	275	344	80	19	80	0	1	1.072	1.5	0	3	0	0	0	20		A097-1Y X LEMHI	1.0	3.5
MSI160-7	275	352	78	21	78	0	1	1.088	1.0	0	0	0	0	0	20		NDA2031-2 X F077-8	3.0	3.5
MSI223-6	272	371	73	25	72	1	2	1.090	2.0	0	2	0	0	0	20		STOBRAWA X NDO1496-1	3.0	4.5
MSI037-7	269	331	81	18	75	6	1	1.082	1.0	1	4	0	0	0	20		B110-3 X NDO1496-1	3.8	3.0
MSI055-5	262	366	72	26	72	0	2	1.080	1.0	0	0	0	0	0	20		BRODICK X E263-10	4.5	2.5
MSI083-5	260	330	79	21	78	1	0	1.080	1.5	1	1	0	0	0	20		C135-5 X B0718-3	-	3.5
MSI039-8Y	257	327	78	17	77	2	4	1.073	1.0	0	0	0	0	0	20		B116-1Y X YUKON	2.8	3.0
MSH360-1	250	288	87	13	87	0	0	1.087	1.0	2	2	0	0	0	20		PIKE X F077-8	3.3	3.5
MSI193-5	250	289	87	13	84	3	1	1.075	1.0	1	0	0	0	0	20		PRESTILE X YUKON	2.0	3.5
MSI234-6Y	250	360	69	30	69	0	1	1.082	1.0	0	1	0	0	0	20		W870 X I. SUNSHINE	2.5	1.5
ONAWAY	245	338	72	25	72	0	2	1.064	4.0	0	6	0	0	0	20			1.2	1.0
MSI085-10	244	320	76	24	76	0	0	1.089	1.0	1	6	0	0	0	20		C135-5 X NDO1496-1	4.7	4.0
MSI083-4	242	299	81	18	81	0	2	1.077	2.0	0	1	0	0	0	20		C135-5 X B0718-3	-	3.0
MSI060-3	238	315	75	24	72	3	1	1.068	2.0	6	2	0	0	0	20		BRODICK X LEMHI	1.0	3.0
MSF015-1	232	284	82	15	81	1	3	1.066	2.0	0	0	0	0	0	20		PIKE X W877	1.3	1.5
MSI026-2	227	335	68	29	68	0	3	1.074	1.0	0	1	0	0	0	20		B076-2 X C135-4	2.8	4.0
MSI066-2	227	369	61	38	61	0	0	1.081	2.0	0	1	0	0	0	20		BZURA X NDO1496-1	1.5	2.5
MSI082-3	223	302	74	26	73	1	0	1.086	1.0	0	4	0	0	0	20		C135-4 X NDO1496-1	4.0	3.0
MSI005-11Y	205	308	67	29	67	0	4	1.071	3.0	0	0	0	0	0	20		A097-1Y X PENTA	3.5	3.0
MSI168-5	203	327	62	38	62	0	0	1.083	2.0	0	0	0	0	0	20		NDO1496-1 X F134-1	3.3	2.0
MSI004-3	202	309	65	33	65	0	1	1.076	2.0	1	0	0	0	0	20		A097-1Y X LEMHI	1.5	3.0
MSI005-12Y	195	316	62	37	62	0	2	1.069	2.5	0	0	0	0	0	20		A097-1Y X PENTA	2.0	2.5
MSF090-9	192	267	72	23	69	3	5	1.072	1.5	0	1	0	0	0	20		PIKE X W870	1.3	2.5
MSH009-A	186	298	62	35	62	0	2	1.075	1.0	0	4	0	0	0	20		A091-1 X LEMHI	2.0	3.0
MSI168-2	180	255	71	27	70	1	2	1.084	1.0	0	2	0	0	0	20		ND01496-1 X F134-1	4.0	3.5
MSI043-1	165	311	53	45	53	0	2	1.085	1.0	0	2	0	0	0	20		B1254-1 X F191-9	2.0	2.5
MSF382-2	151	244	62	38	62	0	0	1.065	1.0	0	2	0	0	0	20		PIKE X L234-5	2.4	3.0
MEAN	267	342						1.078											
LSD (0.05)	72	66						0.004											

<sup>1</sup> Size

B: < 2"  
A: 2 - 3.25"  
OV: > 3.25"  
PO: Pickouts

<sup>2</sup> Quality

HH: Hollow Heart  
BC: Brown Center  
VD: Vascular Discoloration  
IBS: Internal Brown Spot

<sup>3</sup> Scab Disease Rating

(From MSU Scab Nursery)  
1: No Infection  
3: Intermediate  
5: Highly Susceptible

<sup>4</sup> Maturity Rating

Ratings: 1 - 5  
1: Early  
5: Late

Planted May 3, 1999

## †Snack Food Association Chip Score

Out of the Field  
Ratings: 1 - 5  
1: Excellent 5: Poor



Michigan Table 8a. 1999 Scab Disease Trial, Scab Nursery, East Lansing, MI

Line	Rating	Line	Rating	Line	Rating	Line	Rating	Line	Rating
MSA091-1	1.0	MSB106-7	1.3	ACCENT	2.0	ATLANTIC	3.0	B1865-2	3.7
MSA097-1Y	1.0	MSF015-1	1.3	B0564-9	2.0	BOLESTRA	3.0	MSH384-1Y	3.8
A7961-1	1.0	MSF056-1	1.3	MSE040-6RY	2.0	MSE018-1	3.0	MSI037-7	3.8
B0564-8	1.0	MSF090-9	1.3	MSE048-2Y	2.0	MSE228-1	3.0	RED PONTIAC	3.8
MSE028-1	1.0	MSG124-8P	1.3	MSE149-5Y	2.0	MSE228-11	3.0	ELOGE	4.0
MSF087-3	1.0	MSH356-A	1.3	MSE246-5	2.0	MSF014-9	3.0	FV8957-10	4.0
GEM RUSSET	1.0	IDA ROSE	1.3	MSG050-2	2.0	MSF019-11	3.0	MSI057-1	4.0
MSH106-2	1.0	MIDAS	1.3	MSG088-6RUS	2.0	MSF105-10	3.0	MSI077-5	4.0
MSH361-2	1.0	ND4093-4RUS	1.3	MSG145-1Y	2.0	FV9649-6	3.0	MSI082-3	4.0
MSI004-2Y	1.0	NY120	1.3	MSH009-A	2.0	MSG004-3	3.0	MSII68-2	4.0
MSI060-3	1.0	SAGINAW GOLD	1.3	MSH013-A	2.0	MSH017-C	3.0	ND2937-3	4.0
MSII03-5	1.0	WI148R	1.3	MSH031-5	2.0	MSH101-2Y	3.0	TORRIDON	4.0
MSII17-1	1.0	AF1668-60	1.5	MSH063-A	2.0	MSH380-3Y	3.0	MSI002-3	4.3
MN18713RUS	1.0	MSB076-2	1.5	MSH095-2	2.0	MSH419-1	3.0	MSI172-7	4.3
NY121	1.0	MSB107-1	1.5	MSH370-3	2.0	MSI160-7	3.0	P88-6-19	4.3
RUSSET BURBANK	1.0	MSE230-6	1.5	MSI005-12Y	2.0	MSI222-9	3.0	MSE273-8	4.5
SUPERIOR	1.0	MSH015-2	1.5	MSI043-1	2.0	MSI223-6	3.0	MSI055-5	4.5
WI348RUS	1.0	MSH026-3RUS	1.5	MSI053-2	2.0	INNOVATOR	3.0	MSI085-10	4.7
MSE226-4Y	1.1	MSH123-5	1.5	MSI065-2Y	2.0	MI PURPLE	3.0		
MSG227-2	1.1	MSH228-6	1.5	MSI193-5	2.0	SNOWDEN	3.0		
MSE192-8RUS	1.2	MSI004-3	1.5	LADY CLAIRE	2.0	COLUMBO	3.2		
MSE202-3RUS	1.2	MSI066-2	1.5	ND3574-5R	2.0	MSF002-1	3.3		
MSE221-1	1.2	MSNT-1	1.5	RUSSET NORKOTAH	2.0	MSG049-4	3.3		
MSG015-C	1.2	NY112	1.5	REBA	2.0	MSH217-1	3.3		
MSH120-1	1.2	NY115	1.5	VICTORIA	2.0	MSH333-3	3.3		
ONAWAY	1.2	MSF373-8	1.7	WIS75-30	2.0	MSH360-1	3.3		
		MSG141-1	1.7	ACCORD	2.3	MSII68-5	3.3		
		MSII78-8	1.7	CHIPETA	2.3	W1313	3.3		
		ND2676-10	1.7	MSE250-2	2.3	MSF001-2	3.5		
		P83-11-5	1.7	MSG106-5	2.3	MSG274-3	3.5		
		MSG007-1	1.8	MSH041-1	2.3	MSI005-11Y	3.5		
		MSH067-3	1.8	ROCKET	2.3	MSI201-2PY	3.5		
		MSI005-20Y	1.8	SIERRA	2.3				
		ND5084-3R	1.8	MSF382-2	2.4				
		SAXON	1.8	MSC148-A	2.5				
		SW93107	1.8	MSG147-3P	2.5				
				GIGANT	2.5				
				MSH018-1	2.5				
				MSH094-8	2.5				
				MSH098-2	2.5				
				MSH418-1	2.5				
				MSI032-6	2.5				
				MSI050-4	2.5				
				MSI234-6Y	2.5				
				MN16966	2.5				
				ND2470-27	2.5				
				YUKON GOLD	2.5				
				APELL	2.7				
				MSE222-5Y	2.7				
				MSF099-3	2.7				
				MSF313-3	2.7				
				MSH306-B	2.7				
				MSF059-1	2.8				
				MSI026-2	2.8				
				MSI039-8Y	2.8				
				MATILDA	2.8				
				NAVAN	2.8				
				WI355-1	2.8				
				ZAREVO	2.8				

**SCAB DISEASE RATING**

1: PRACTICALLY NO INFECTION

2: LOW INFECTION

3: AVG. SUSCEPTIBILITY (i.e. ATLANTIC)

4: HIGH SUSCEPTIBILITY

5: SEVERE SUSCEPTIBILITY

**Michigan Table 8b. Scab Disease Trial, Three-Year Averages, Scab Nursery, East Lansing, MI.**

	1997	1998	1999			1997	1998	1999	
<b>Line</b>	<b>Rating</b>	<b>Rating</b>	<b>Rating</b>	<b>Avg.</b>	<b>Line</b>	<b>Rating</b>	<b>Rating</b>	<b>Rating</b>	<b>Avg.</b>
A7961-1	1.0	1.0	1.0	1.0	MSE246-5	1.4	1.0	2.0	1.5
ATLANTIC	3.3	3.3	3.0	3.2	MSE250-2	3.2	4.0	2.3	3.2
MATILDA	2.3	2.5	2.8	2.5	MSF001-2	2.0	4.0	3.5	3.2
MSA091-1	1.8	1.5	1.0	1.4	MSF019-11	2.8	3.3	3.0	3.0
MSA097-1Y	1.7	2.0	1.0	1.6	MSF099-3	2.5	3.7	2.7	3.0
MSB076-2	1.8	1.2	1.5	1.5	MSF313-3	1.8	2.7	2.7	2.4
MSB106-7	1.3	2.3	1.3	1.6	MSF373-8	3.0	2.3	1.7	2.3
MSB107-1	1.8	1.0	1.5	1.4	MSG050-2	2.0	4.0	2.0	2.7
MSC148-A	2.4	3.3	2.5	2.7	MSG124-8P	1.5	1.7	1.3	1.5
MSE018-1	2.6	3.0	3.0	2.9	MSG227-2	1.0	1.0	1.1	1.0
MSE048-2Y	2.1	1.0	2.0	1.7	MSNT-1	1.0	1.8	1.5	1.4
MSE149-5Y	2.0	1.8	2.0	1.9	ND2676-10	1.5	1.5	1.7	1.6
MSE192-8RUS	1.3	1.0	1.2	1.2	ONAWAY	1.0	1.5	1.2	1.2
MSE202-3RUS	1.0	-	1.2	1.1	RED PONTIAC	2.6	3.3	3.8	3.2
MSE221-1	1.0	1.5	1.2	1.2	RUSSET BURBANK	1.0	1.0	1.0	1.0
MSE222-5Y	3.0	2.0	2.7	2.6	RUSSET NORKOTAH	1.8	2.0	2.0	1.9
MSE226-4Y	1.9	2.3	1.1	1.8	SAGINAW GOLD	1.5	2.0	1.3	1.6
MSE228-1	2.7	2.8	3.0	2.8	SNOWDEN	2.5	3.5	3.0	3.0
MSE228-11	1.5	3.2	3.0	2.6	W1313	3.0	2.7	3.3	3.0
MSE230-6	1.5	2.3	1.5	1.8	YUKON GOLD	3.0	2.7	2.5	2.7

SCAB DISEASE RATING

- 1: PRACTICALLY NO INFECTION
- 2: LOW INFECTION
- 3: AVG. SUSCEPTIBILITY (i.e. ATLANTIC)
- 4: HIGH SUSCEPTIBILITY
- 5: SEVERE SUSCEPTIBILITY

**Michigan Table 9.** Late Blight Variety Trial, Muck Soils Research Farm.  
(Inoculated July 22, 1999. Rating based on a 28-day evaluation period. RAUDPC Max = 1.000)

LINE	RAUDPC <sup>1</sup> LSMEAN	LINE	RAUDPC LSMEAN
LBR8	0.0336	LBR1R2R3R4	0.2064
LBR9	0.0369	<b>SHEPODY</b>	<b>0.2066</b>
<b>MSG274-3</b>	<b>0.0377</b>	NAVAN	0.2157
B0767-2	0.0379	MIDAS	0.2189
Q237-25	0.0452	LBR4	0.2195
AWN86514-2	0.0522	MSH120-1	0.2257
TORRIDON	0.0696	NORDONNA	0.2258
ROBIJN	0.0717	NORVALLEY	0.2315
B0718-3	0.0742	ND69488-5RUS	0.2319
B0288-17	0.0788	<b>GOLDRUSH</b>	<b>0.2345</b>
A90586-11	0.0866	GIGANT	0.2366
B1865-2	0.0942	CHIPETA	0.2377
ND6947B-15	0.0957	ACCORD	0.2381
LBR7	0.1070	BOLESTRA	0.2397
C086218-2	0.1265	COLUMBO	0.2419
C0083008-1	0.1304	SIERRA	0.2433
DORITA	0.1427	<b>ATLANTIC</b>	<b>0.2434</b>
ZAREVO	0.1529	<b>YUKON GOLD</b>	<b>0.2445</b>
NY121	0.1618	VICTORIA	0.2457
B9922-11	0.1669	SAXON	0.2472
A082611-7	0.1673	<b>SUPERIOR</b>	<b>0.2529</b>
LBR2	0.1682	ELOGE	0.2564
<b>RUSSET NORKOTAH</b>	<b>0.1753</b>	APELL	0.2620
LBR5	0.1764	ACCENT	0.2622
ND6948B-12	0.1772	<b>RED PONTIAC</b>	<b>0.2779</b>
W91-9459	0.1798	IDA ROSE	0.2781
ND02438-7R	0.1810	LADY CLAIRE	0.2916
<b>RED LASODA</b>	<b>0.1824</b>	GEM RUSSET	0.2938
LBR3	0.1836	<b>RED NORLAND</b>	<b>0.2940</b>
MSG124-8P	0.1854	ROCKET	0.2962
<b>RUSSET BURBANK<sup>2</sup></b>	<b>0.1930</b>	SAGINAW GOLD	0.2986
<b>SNOWDEN</b>	<b>0.1933</b>	<b>ONAWAY</b>	<b>0.3076</b>
<b>PIKE</b>	<b>0.1959</b>	REBA	0.3126
<b>RANGER RUSSET</b>	<b>0.2052</b>	W1355-1	0.6101
		LSD <sub>0.05</sub> =	0.0837

<sup>1</sup> Ratings indicate the RAUDPC (Relative Area Under the Disease Progress Curve) over the entire plot.

<sup>2</sup> 170 varieties and breeding lines were tested in all. For brevity purposes, only selected varieties and breeding lines with a RAUDPC value greater than Russet Burbank are listed.

Michigan Table 10a. 1999 Blackspot Bruise Susceptibility Test. Simulated Bruise Samples\*

VARIETY	NUMBER OF SPOTS PER TUBER						TOTAL TUBERS	PERCENT (%)	
	0	1	2	3	4	5+		BRUISE FREE	AVERAGE SPOTS/TUBER
<b>ROUND WHITES: LATE HARVEST</b>									
MSE228-1	20	4	1				25	80	0.240
MSF014-9	18	7					25	72	0.280
MSE149-5Y	18	5	1				24	75	0.292
MSE228-11	18	5	2				25	72	0.360
CHIPETA	15	8	1				24	63	0.417
ONAWAY	14	4	1	1			20	70	0.450
MSG227-2	17	5	1		1		24	71	0.458
NY115	13	8	2				23	57	0.522
SUPERIOR	13	7	3				23	57	0.565
MSF099-3	16	4	6	1			27	59	0.704
P83-11-5	9	10	2	3			24	38	0.958
MSE246-5	10	10	3	3			26	38	0.962
MSC148-A	10	6	7		1		24	42	1.000
MSE221-1	9	6	8	2			25	36	1.120
SNOWDEN	7	7	5	1	1		21	33	1.143
MSG050-2	6	11	4	3			24	25	1.167
MSB076-2	8	5	6	4			23	35	1.261
MSG274-3	7	6	8	3			24	29	1.292
REBA	6	5	6	4			21	29	1.381
MSA091-1	5	8	6	3	1		23	22	1.435
MSF313-3	8	9	3	2	2	2	26	31	1.500
MSE250-2	4	8	9	3	1		25	16	1.560
NY112	5	7	4	8		1	25	20	1.760
ATLANTIC	5	7	5	3	2	3	25	20	1.960
NY120	4	8	3	6	3	1	25	16	1.960
MSE018-1	1	4	8	10	1		24	4	2.250
MSNT-1		5	10	6	1	3	25	0	2.480
<b>LONG WHITES and RUSSETS</b>									
A7961-1	24	1					25	96	0.040
RUSSET NORKOTAH	23	2					25	92	0.080
MSE192-8RUS	19	2					21	90	0.095
RUSSET BURBANK	18	5					23	78	0.217
MSH026-RUS	19	6					25	76	0.240
MSE202-3RUS	13	12					25	52	0.480
ND4093-4RUS	10	12	2				24	42	0.667
INNOVATOR	14	6	7				27	52	0.741
GEM RUSSET	10	7	5	1			23	43	0.870
MSG088-6RUS	10	6	4	3			23	43	1.000
MSB106-7	4	9	7	3	2		25	16	1.600
<b>NORTH CENTRAL REGIONAL TRIAL</b>									
ND3574-5R	29	1					30	97	0.033
MN17922	20	5					25	80	0.200
NORLAND	19	7		1			27	70	0.370
ND5084-3R	15	7	1				23	65	0.391
FV8957-10	16	9	1				26	62	0.423
RED PONTIAC	19	6	3				28	68	0.429
W1148R	9	11	3	1	1		25	36	0.960
NORVALLEY	9	8	11	2			30	30	1.200

Michigan Table 10a. Continued.

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
ND4093-4RUS	11	8	5	4	1	1	30	37	1.300
MSB107-1	8	7	9	3	1		28	29	1.357
MSE018-1	7	8	10	4			29	24	1.379
MN16966	7	11	4	4	2	1	29	24	1.517
MN18713	5	7	5	6	2	2	27	19	1.963
ATLANTIC	5	4	9	7	4	1	30	17	2.133
SNOWDEN	2	6	11	3	3	2	27	7	2.185
W1355-1	2	7	10	6	3	2	30	7	2.233
<b>YELLOW FLESH and EUROPEAN TRIAL</b>									
MSG145-1	24	1					25	96	0.040
LADY CLAIRE	23	2					25	92	0.080
YUKON GOLD	22	2					24	92	0.083
CUMBO	24	3					27	89	0.111
MSE040-6RY	18	3					21	86	0.143
BOLESTRA	18	6					24	75	0.250
APELL	18	7					25	72	0.280
ELOGE	15	5	2				22	68	0.409
MSE048-2Y	13	8	1				22	59	0.455
VICTORIA	12	12					24	50	0.500
W1575-30	17	9	3				29	59	0.517
MSA097-1Y	14	8	3				25	56	0.560
SIERRA	14	4	4	1			23	61	0.652
ZAREVO	12	7	5				24	50	0.708
MSE226-4Y	10	11	1	1	1		24	42	0.833
ACCORD	6	14	3	1			24	25	0.958
MATILDA	8	9	5	3			25	32	1.120
ACCENT	8	8	2	5			23	35	1.174
SW93107	2	8	7	4	1	1	23	9	1.870
GIGANT	2	7	8	5	2		24	8	1.917
SAGINAW GOLD	2	6	7	5	3		23	9	2.043
TORRIDON		5	6	4	3	1	19	0	2.421
ND2470-27	2	4	6	8	5	2	27	7	2.593
MSE222-5Y		2	7	6	4	5	24	0	3.125
<b>ADAPTATION TRIAL</b>									
MSG147-3P	20	6					26	77	0.231
MS1201-2PY	16	7	1				24	67	0.375
SAXON	15	8	3				26	58	0.538
MSH370-3	14	8	1	2			25	56	0.640
MSH384-14	14	6	4	1			25	56	0.680
IDA ROSE	12	9	4				25	48	0.680
MSF002-1	12	8	3	1			24	50	0.708
MSE028-1	11	12		2			25	44	0.720
MSG124-8P	10	10	4				24	42	0.750
MSH031-5	12	7	3	2			24	50	0.792
ONAWAY	11	9	2	1	1		24	46	0.833
MIDAS	9	9	6				24	38	0.875
MSH041-1	10	11	2	1	1		25	40	0.880
MSH321-1	7	7	3	2			19	37	1.000
MSG141-3	7	11	6	1			25	28	1.040

Michigan Table 10a. Continued.

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
NAVAN	8	10	5	2			25	32	1.040
MSH098-2	7	11	5	2			25	28	1.080
MSH101-2	10	6	4	4			24	42	1.083
MSH361-2	9	7	6	2	1		25	36	1.160
MSH333-3	7	10	5	2	1		25	28	1.200
MSF001-2	7	10	5	1	2		25	28	1.240
MSH217-1	10	9	3		2	2	26	38	1.269
MSG004-3	6	8	8	3			25	24	1.320
MSH380-3Y	8	9	3	3	1	1	25	32	1.320
SNOWDEN	5	9	9	2			25	20	1.320
SUPERIOR	4	13	7	1		1	26	15	1.346
MSH015-2	8	5	7	4	1		25	32	1.400
MSH228-6	5	10	4	3	2		24	21	1.458
ROCKET	4	8	10	2	1		25	16	1.520
MSH018-5	4	8	8	5			25	16	1.560
MSH418-1	4	9	6	6			25	16	1.560
MSH094-8	5	7	6	5	1		24	21	1.583
MSH120-1	4	11	3	5	1	1	25	16	1.640
MSH123-5	3	10	7	4		1	25	12	1.640
MSE273-8	4	3	10	4	3	1	25	16	2.080
MSH419-1	3	5	7	6	1	2	24	13	2.125
MSG007-1	1	8	7	5	2	2	25	4	2.200
MI PURPLE	1	7	8	5	3	1	25	4	2.200
MSF060-6		4	12	5	4		25	0	2.360
MSF087-3	4	4	6	4	3	4	25	16	2.400
MSH095-4		9	5	6	2	3	25	0	2.400
MSG015-C	2	5	5	5	3	3	23	9	2.478
MSH106-2		6	7	7	3	2	25	0	2.520
ATLANTIC	1	3	6	4	8	3	25	4	2.960
MSG049-4	1	6	3	2	3	8	23	4	3.043

**PRELIMINARY TRIAL**

MSF015-1	23	1					24	96	0.042
MSI178-8	19	4					23	83	0.174
ONAWAY	22	3	1				26	85	0.192
MSH063-A	20	4	1				25	80	0.240
B1865-2	15	3	1				19	79	0.263
MSI005-20Y	17	5	1				23	74	0.304
MSH013-A	18	6	1				25	72	0.320
MSI005-12Y	17	8					25	68	0.320
MSI039-8Y	17	8					25	68	0.320
MSI077-5	16	9					25	64	0.360
MSI004-3	14	6	1				21	67	0.381
MSI005-11Y	15	10					25	60	0.400
MSI193-5	14	8	2				24	58	0.500
MSF090-9	16	5	4				25	64	0.520
MSI002-3	11	12					23	48	0.522
MSI057-1	13	7		2			22	59	0.591
MSI037-7	9	10	1				20	45	0.600
MSI082-3	15	6	3	1			25	60	0.600
MSI103-5	12	10	1	1			24	50	0.625



Michigan Table 10a. Continued.

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
MSI083-5	12	10	3				25	48	0.640
MSI117-1	11	12	2				25	44	0.640
MSI234-6Y	12	10	3				25	48	0.640
MSF373-8	11	9	3				23	48	0.652
MSI168-5	12	9	2	1			24	50	0.667
MSF382-2	11	11	3				25	44	0.680
MSI004-2Y	12	10	2	1			25	48	0.680
MSI005-5	10	11	3				24	42	0.708
MSI066-2	18	10	6	1			35	51	0.714
MSI160-7	10	7	4				21	48	0.714
MSI026-2	11	9	2	2			24	46	0.792
MSH009-A	7	7	2	1			17	41	0.824
MSH360-1	13	6	4	1		1	25	52	0.880
MSI083-4	10	6	3	1	1		21	48	0.905
MSI168-2	9	6	5	1			21	43	0.905
MSI085-10	14	7	7	3			31	45	0.968
SNOWDEN	9	6	5	3			23	39	1.087
ATLANTIC	11	4	3	3	2		23	48	1.174
MSI060-3	7	8	6	4			25	28	1.280
MSH017-C	7	7	5	3	1		23	30	1.304
MSI053-2	6	8	7	4			25	24	1.360
MSG106-5	1	15	5	4			25	4	1.480
MSI223-6	8	7	3	4	3		25	32	1.480
MSH306-B	5	11	3	2	1	2	24	21	1.542
MSH067-3	4	8	10	2	1	1	26	15	1.654
MSI043-1	1	11	6	7			25	4	1.760
MSI050-4	1	6	8	10	1		26	4	2.154
MSI172-7		6	8	8	3		25	0	2.320
<b>SNACK FOOD ASSOCIATION TRIAL</b>									
ND2676-10	17	3					20	85	0.150
NY115	21	2	1				24	88	0.167
AF1668-60	12	9	1				22	55	0.500
B0564-8	13	7	2				22	59	0.500
MSA091-1	12	13					25	48	0.520
B0564-9	11	10	1				22	50	0.545
MSNT-1	11	7	2				20	55	0.550
W1313	13	7	2	1			23	57	0.609
SNOWDEN	12	8	3	1			24	50	0.708
ND2470-27	4	12	8	2			26	15	1.308
NY112	2	4	8	7	4		25	8	2.280

\* A-size tuber samples were collected at harvest, held at 50 F at least 12 hours, and placed in a six-sided plywood drum and rotated ten times to produce simulated bruising. Samples were abrasive-peeled and scored on October 20, 1999. The table is presented in descending order of average number of spots per tuber.

Michigan Table 10b. 1999 Blackspot Bruise Susceptibility Test Check Bruise Samples.<sup>1</sup>

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
<b><u>ROUND WHITES: LATE HARVEST</u></b>									
MSE228-11	24						24	100	0.000
MSE149-5Y	20	1					21	95	0.048
ONAWAY	22	2					24	92	0.083
SNOWDEN	22	3					25	88	0.120
SUPERIOR	20	3					23	87	0.130
MSF014-9	21	4					25	84	0.160
P83-11-5	21	4					25	84	0.160
MSF099-3	20	4					24	83	0.167
REBA	21	2	1				24	88	0.167
MSE228-1	21	3	1				25	84	0.200
NY120	20	3	1				24	83	0.208
MSE221-1	18	5					23	78	0.217
MSB076-2	17	6					23	74	0.261
CHIPETA	17	6					23	74	0.261
MSG227-2	19	3		1			23	83	0.261
MSE246-5	17	4	1				22	77	0.273
MSC148-A	18	6	1				25	72	0.320
MSE018-1	19	5		1			25	76	0.320
MSG274-3	16	7	1				24	67	0.375
MSA091-1	18	4	3				25	72	0.400
NY115	16	8	1				25	64	0.400
MSE250-2	19	2	3	1			25	76	0.440
MSG050-2	15	9	1				25	60	0.440
MSF313-3	20	9	1	1			31	65	0.452
MSNT-1	15	7	2				24	63	0.458
NY112	10	9	4				23	43	0.739
ATLANTIC	9	6	3	1	1	2	22	41	1.318
<b><u>LONG WHITES and RUSSETS</u></b>									
MSH026-RUS	25						25	100	0.000
MSE202-3	24	1					25	96	0.040
MSE192-8RUS	24	1					25	96	0.040
ELOGE	24	1					25	96	0.040
RUSSET BURBANK	24	1					25	96	0.040
RUSSET NORKOTAH	24	1					25	96	0.040
A7961-1	23	2					25	92	0.080
GEM RUSSET	22	3					25	88	0.120
ND4093-4RUS	22	3					25	88	0.120
INNOVATOR	21	4					25	84	0.160
MSG088-6RUS	20	2	1				23	87	0.174
MSB106-7	20	5					25	80	0.200
<b><u>NORTH CENTRAL REGIONAL TRIAL</u></b>									
ND3574-5R	27	3					30	90	0.100
FV8957-10	25	3					28	89	0.107
W1575-30	27	4					31	87	0.129
MN17922	23	6					29	79	0.207
NORVALLEY	23	7					30	77	0.233
MSE018-1	22	8					30	73	0.267
ND5084-3R	20	5	1				26	77	0.269

Michigan Table 10b. Continued.

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
NORLAND	19	8					27	70	0.296
RED PONTIAC	21	5	2				28	75	0.321
W1148R	21	5	2				28	75	0.321
SNOWDEN	18	9	2				29	62	0.448
MN1696 6	19	8	4				31	61	0.516
MSB107-1	19	10	5				34	56	0.588
ND4093-4RUS	15	9	4				28	54	0.607
W1355-1	15	12	4	2			33	45	0.788
ATLANTIC	15	9	5	2			31	48	0.806
MN1871 3	11	12	4	1			28	39	0.821
ND2470-27	10	10	6	2			28	36	1.000

**YELLOW FLESH and EUROPEAN TRIAL**

YUKON GOLD	25						25	100	0.000
CUMBO	24	1					25	96	0.040
MSG145-1	24	1					25	96	0.040
ACCENT	23	2					25	92	0.080
ACCORD	23	2					25	92	0.080
APELL	23	2					25	92	0.080
BOLESTRA	23	2					25	92	0.080
MSE226-4Y	23	2					25	92	0.080
LADY CLAIRE	22	3					25	88	0.120
SW93 107	22	3					25	88	0.120
ZAREVO	22	3					25	88	0.120
MATILDA	21	4					25	84	0.160
TORRIDON	22	2	1				25	88	0.160
MSA097-1Y	20	5					25	80	0.200
MSE048-2Y	21	3	1				25	84	0.200
SIERRA	22	1	2				25	88	0.200
VICTORIA	20	5					25	80	0.200
MSE040-6RY	16	6					22	73	0.273
GIGANT	19	5	1				25	76	0.280
SAGINAW GOLD	17	6	2				25	68	0.400
MSE222-5Y	9	9	4	1	1	1	25	36	1.160

**ADAPTATION TRIAL**

MSE273-8	24	1					25	96	0.040
MSG049-4	23	1					24	96	0.042
ONAWAY	23	1					24	96	0.042
MSH370-3	22	1					23	96	0.043
MSH120-1	23	2					25	92	0.080
MSG007-1	22	2					24	92	0.083
MSG141-3	22	2					24	92	0.083
MSH384-1Y	22	2					24	92	0.083
MSG124-8P	21	3					24	88	0.125
MSH098-2	21	3					24	88	0.125
IDAROSE	20	4					24	83	0.167
MSE028-1	19	5					24	79	0.208
MSF002-1	20	3	1				24	83	0.208
MSH031-5	20	3	1				24	83	0.208
MSH041-1	19	5					24	79	0.208

Michigan Table 10b. Continued.

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
MSH419-1	19	5					24	79	0.208
MSH321-1	15	5					20	75	0.250
MSI201-2PY	17	7					24	71	0.292
MSG004-3	18	4		1			23	78	0.304
MSH380-3Y	16	7					23	70	0.304
MSH101-2	17	3	2				22	77	0.318
MSH015-2	18	5		1			24	75	0.333
MIDAS	18	5		1			24	75	0.333
MI PURPLE	17	6	1				24	71	0.333
MSH018-5	18	7	1				26	69	0.346
MSH123-5	16	6	1				23	70	0.348
MSH094-8	12	4	1				17	71	0.353
SAXON	16	7	1				24	67	0.375
SUPERIOR	20		3	1			24	83	0.375
MSH228-6	15	7	1				23	65	0.391
SNOWDEN	13	9					22	59	0.409
MSH418-1	16	7	1	1			25	64	0.480
MSF001-2	16	3	2		1		22	73	0.500
MSH217-1	19	5			1	1	26	73	0.538
MSH361-2	13	6	3	1			23	57	0.652
MSH333-3	13	6	2	2			23	57	0.696
MSH106-2	11	7	4	1			23	48	0.783
ROCKET	10	11	4	1			26	38	0.846
MSH095-4	10	7	4	2			23	43	0.913
NAVAN	11	8	1		3	1	24	46	1.125
MSF087-3	9	8	4	2	1	1	25	36	1.240
MSF060-6	8	6	5	3	2		24	33	1.375
ATLANTIC	8	4	5	4	1	1	23	35	1.522
MSG015-C	4	8	5	6	1	1	25	16	1.800
<b>PRELIMINARY TRIAL</b>									
MSI004-2Y	25						25	100	0.000
MSI004-3	25						25	100	0.000
MSI005-20Y	25						25	100	0.000
MSI160-7	25						25	100	0.000
SNOWDEN	21						21	100	0.000
MSF015-1	24	1					25	96	0.040
MSH009-A	24	1					25	96	0.040
MSI026-2	24	1					25	96	0.040
MSI039-8Y	24	1					25	96	0.040
MSH360-1	24	2					26	92	0.077
MSF090-9	23	2					25	92	0.080
MSI005-11Y	23	2					25	92	0.080
MSI005-12Y	23	2					25	92	0.080
MSI050-4	23	2					25	92	0.080
MSI117-1	23	2					25	92	0.080
MSI193-5	23	2					25	92	0.080
ONAWAY	23	2					25	92	0.080
MSI053-2	21	2					23	91	0.087
MSI037-7	15	2					17	88	0.118
B1865-2	22	3					25	88	0.120

Michigan Table 10b. Continued.

VARIETY	NUMBER OF SPOTS PER TUBER						PERCENT (%)		
	0	1	2	3	4	5+	TOTAL TUBERS	BRUISE FREE	AVERAGE SPOTS/TUBER
MSI057-1	23	1	1				25	92	0.120
MSI083-4	22	3					25	88	0.120
MSI083-5	18	3					21	86	0.143
MSI085-10	19	1	1				21	90	0.143
MSI082-3	21	4					25	84	0.160
MSI103-5	21	4					25	84	0.160
MSI178-8	21	4					25	84	0.160
MSI234-6Y	21	4					25	84	0.160
MSH013-A	18	4					22	82	0.182
MSH063-A	20	5					25	80	0.200
MSH067-3	21	3	1				25	84	0.200
MSI168-2	20	5					25	80	0.200
MSI066-2	29	4		1			34	85	0.206
MSI055-5	21	2	2				25	84	0.240
MSI168-5	22	1	1	1			25	88	0.240
ATLANTIC	19	2	1	1			23	83	0.304
MSI002-3	20	3	1	1			25	80	0.320
MSF373-8	17	7	1				25	68	0.360
MSF382-2	19	2	2	1			24	79	0.375
MSG106-5	16	6	2				24	67	0.417
MSI060-3	16	4				1	21	76	0.429
MSH306-B	17	5	2	1			25	68	0.480
MSH017-C	15	8	1	1			25	60	0.520
MSI223-6	15	4	5				24	63	0.583
MSI172-7	13	8	2	1	1		25	52	0.760
MSI043-1	7	8	4	5	1		25	28	1.400
<b>SNACK FOOD ASSOCIATION TRIAL</b>									
B0564-9	26						26	100	0.000
ND2676-10	24						24	100	0.000
SNOWDEN	24						24	100	0.000
AF1668-60	25	1					26	96	0.038
MSNT-1	24	1					25	96	0.040
MSA091-1	23	1					24	96	0.042
B0564-8	22	2					24	92	0.083
NY115	22	2					24	92	0.083
W1313	19	5					24	79	0.208
ND2470-27	18	4	2	1			25	72	0.440
NY112	14	3	5				22	64	0.591

<sup>1</sup>Tuber samples were collected at harvest, graded, and held until evaluation. Samples were abrasive-peeled and scored on October 20, 1999.

Michigan Table 11. 1999 Fusarium Dry Rot Trial

LINE	TRIAL	LESION LESION		LINE	TRIAL	LESION LESION		LINE	TRIAL	LESION LESION	
		DEPTH	DIAMETER			DEPTH	DIAMETER			DEPTH	DIAMETER
		(mm)	(mm)			(mm)	(mm)			(mm)	(mm)
<b>R. Norkotah</b>	<b>LONG</b>	2.9	11.4	<b>Atlantic</b>	<b>DOH</b>	6.3	15.2	<b>MSI172-7</b>	<b>PRE</b>	10.1	20.5
MSH106-2	AD	3.1	7.5	MSC148-A	DOH	6.3	16.2	MSH013-A	PRE	10.2	28.5
Midas	AD	3.3	7.4	MSE018-1	NC	6.3	12.1	HLG3-A	PRE	10.2	18.2
MSG004-3	AD	3.4	6.9	Sierra	EURO	6.4	13.7	MSI005-12Y	PRE	10.3	31.4
Snowden	NC	3.5	8.8	Gigant	EURO	6.4	16.8	MSH321-1	AD	10.5	14.9
MSI050-4	PRE	3.5	7.5	Wis75-30	NC	6.5	17.5	MSE228-11	DOH	10.5	19.5
MSG106-5	PRE	3.7	14.8	MSE040-6RY	EURO	6.5	17.7	ND4093-4RUS	LONG	10.5	19.4
NY120	DOH	3.7	9.4	MSNT-1	DOH	6.6	11.6	MSI160-7	PRE	10.5	17.0
P83-11-5	DOH	3.8	11.3	MSF014-9	DOH	6.7	22.6	MSI083-4	PRE	10.6	16.8
Navan	AD	3.8	12.8	W1355-1	NC	6.8	14.8	MSH015-2	AD	10.8	17.8
Snowden	AD	3.8	7.9	MSG015-C	AD	6.8	14.1	MSH418-1	AD	10.8	17.5
MSH031-5	AD	3.8	8.3	MSI004-2Y	PRE	6.9	16.2	MSE250-2	DOH	10.9	20.6
Superior	AD	3.9	7.5	MSI082-3	PRE	6.9	14.4	MN17922	NC	10.9	26.5
MSH228-6	AD	4.0	10.8	MSE221-1	DOH	6.9	12.6	MSG141-3	AD	11.0	15.7
Ida Rose	AD	4.1	8.8	MSG050-2	DOH	7.1	12.9	FV8957-10	NC	11.0	30.0
Rocket	AD	4.1	12.7	A7961-1	LONG	7.1	14.6	MSI178-8	PRE	11.2	21.2
Chipeta	DOH	4.1	9.2	Accent	EURO	7.1	33.6	MSG147-3P	AD	11.2	16.1
Russet Burbank	CHECK	4.5	9.2	MSH098-2	AD	7.2	15.4	MSH041-1	AD	11.4	19.7
MSI193-5	PRE	4.6	8.0	Accord	EURO	7.2	13.9	MSI005-20Y	PRE	11.5	22.2
Superior	DOH	4.6	9.2	Gem Russet	LONG	7.3	22.6	MSF015-1	PRE	11.5	24.0
MN16966	NC	4.6	14.5	Onaway	PRE	7.3	13.7	MSI004-3	PRE	11.6	20.4
MSH120-1	AD	4.7	10.6	MSI066-2	PRE	7.4	13.5	MSH095-4	AD	11.6	21.2
HLG7-3	PRE	4.7	10.4	MSH333-3	AD	7.5	13.1	MSG274-3	DOH	11.8	15.6
Zarevo	EURO	4.7	10.9	MSH009-A	PRE	7.5	17.0	Saginaw Gold	EURO	11.8	27.5
MSE018-1	DOH	4.7	11.1	Innovator	LONG	7.6	28.4	MSH217-1	AD	12.1	16.7
Lady Claire	EURO	4.7	12.0	MSA097-1	EURO	7.7	19.5	MSI043-1	PRE	12.1	24.4
MSG049-4	AD	4.8	10.0	MSH384-1Y	AD	7.7	16.3	MSI085-10	PRE	12.2	26.2
Russet Burbank	LONG	4.8	13.2	ND2470-27	NC	7.7	22.0	MSI057-1	PRE	12.3	17.7
Saxon	AD	4.8	10.3	MSA091-1	DOH	7.8	13.1	MSE226-4Y	EURO	12.8	27.1
Reba	DOH	4.8	10.2	W1148R	NC	7.8	17.1	MSI005-11Y	PRE	12.8	25.0
NY112	DOH	4.9	10.1	MSI055-5	PRE	7.8	15.5	MSI026-2	PRE	13.1	30.2
MSE202-3RUS	LONG	4.9	10.5	MSE192-8RUS	LONG	7.9	13.3	MSF090-9	PRE	13.3	19.6
MSF099-3	DOH	5.0	10.4	B1865-2	PRE	8.0	15.3	SW93107	EURO	13.5	20.9
MSH101-2	AD	5.0	11.1	MSH360-1	PRE	8.0	19.9	MSE028-1	AD	13.7	20.3
MSE246-5	DOH	5.1	13.9	MSH094-8	AD	8.0	20.0	MN18713	NC	14.2	17.4
Red Pontiac	NC	5.3	8.6	MSH419-1	AD	8.1	15.1	Eloge	EURO	15.4	24.7
MSH018-5	AD	5.4	14.4	MSE149-5Y	DOH	8.1	19.8	MSB107-1	NC	16.4	30.8
MSG227-2	DOH	5.4	11.4	Norland	NC	8.1	17.6	Atlantic	NC	16.6	28.8
Onaway	AD	5.4	10.3	MSI037-7	PRE	8.1	14.2	Apell	EURO	17.5	29.4
MSG007-1	AD	5.5	10.4	MSI083-5	PRE	8.1	17.9	MSE048-2Y	EURO	18.5	38.6
MSF087-3	AD	5.6	9.1	MSH306-B	PRE	8.3	15.4	MSI002-3	PRE	18.7	38.6
MSI223-6	PRE	5.6	9.6	MSE222-5Y	EURO	8.4	15.3	ND5084-3R	NC	19.5	25.5
MSH123-5	AD	5.6	10.5	ND4093-4RUS	NC	8.4	12.2	MSF382-2	PRE	20.0	34.7
Yukon Gold	EURO	5.6	14.5	MSI053-2	PRE	8.5	25.4	MSG124-8P	AD	20.7	51.4
MI Purple	AD	5.6	10.4	MSG088-6RUS	LONG	8.5	15.0				
Onaway	DOH	5.6	10.8	MSF373-8	PRE	8.6	14.1				
Torridon	EURO	5.7	21.3	Columbo	EURO	8.6	16.9				
Snowden	PRE	5.7	10.0	MSI117-1	PRE	8.6	19.8				
MSH380-3Y	AD	5.8	9.8	Victoria	EURO	8.7	15.1				
MSH361-2	AD	5.8	10.0	NY115	DOH	8.9	13.9				
MSF313-3	DOH	5.8	11.0	MSI039-8Y	PRE	8.9	16.6				
MSB076-2	DOH	5.8	14.7	MSH017-C	PRE	9.0	16.2				
Russet Burbank	CHECK	5.9	11.0	NY121	AD	9.1	14.0				
MSH370-3	AD	5.9	12.2	MSE273-8	AD	9.2	14.8				
MSG145-1	EURO	5.9	23.6	MSB106-7	LONG	9.3	21.7				
Snowden	DOH	6.0	11.2	Atlantic	PRE	9.3	24.8				
MSH026-3RUS	LONG	6.0	17.2	MSI168-5	PRE	9.4	19.2				
MSI060-3	PRE	6.1	20.5	MSE228-1	DOH	9.4	15.8				
MSI103-5	PRE	6.1	15.2	MSF060-6	AD	9.5	18.0				
Matilda	EURO	6.1	12.4	MSI234-6Y	PRE	9.6	15.5				
MSI168-2	PRE	6.2	15.8	MSI201-2PY	AD	9.7	21.5				
ND3574-5R	NC	6.2	17.2	MSF001-2	AD	9.7	22.5				
MSF002-1	AD	6.2	17.3	NorValley	NC	9.8	31.9				
Bolestra	EURO	6.2	14.0								

Depth LSD (0.05) = 4.1

Diameter LSD (0.05) = 7.0



## Nebraska Potato Variety Trials

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### Introduction

In 1999, trials were conducted at Alliance, Imperial, Minden, O'Neill, and Scottsbluff. All entries were planted at Scottsbluff. White-skinned and a yellow, chip, entries (18) were planted at Alliance and Minden, and russet- and red-skinned entries (32) were planted at Imperial and O'Neill. There were 17 white-skinned, 25 russet, 6 red, and 2 yellow-fleshed entries. Nebraska participated in the North Central Regional (NCR) trial having 26 entries. This trial was conducted at the Panhandle Research and Extension Center (PREC) in Scottsbluff. A trial was conducted for NatureMark on two Russet Norkotah transgenic lines in O'Neill.

### Materials, Methods and Conditions

Soils were sandy loams; pHs ranged from 4.8 (Minden) to 7.8 (Scottsbluff), and organic matter content was between 0.9 (Alliance) and 1.4% (O'Neill). The ranges of major fertilizers were 130-310 lb N/A, 50-180 lb P<sub>2</sub>O<sub>5</sub>/A, 0-180 lb K<sub>2</sub>O/A and 0-80 lb S/A. Boron, copper and zinc were added at some sites. Seed pieces were cut, treated with TOPS MZ and stored for two to 17 days at 55° F. Growers used their conventional practices. Insecticides were Admire or Thimet applied at planting and, depending on location, post-emergence applications of Asana (psyllids, CPB, aphids), Malathion (psyllids), Monitor (aphids), Provado (psyllids) and Thiodan (psyllids and false chinch bugs). Depending on location, Turbo, Dual + Sencor, Lexone + Prowl were applied pre-emergence; Matrix and Poast were applied post-emergence. Blight treatments were Bravo Zn, Dithane, Quadris, Ridomil-Bravo, Ridomil-MZ and SuperTin. Vines died either with Diquat or sulfuric acid, natural (Minden) or frost (Scottsbluff, 9/28).

The trial design was strip plots at all locations except Alliance where it was RCBD with three replicates. In Alliance, 20 plants (16 ft) were harvested in each

replicate; at all other locations, 24 plants were harvested in each strip (23 ft at Imperial, 20 ft at Minden, 21 ft at O'Neill) except at Scottsbluff where 30 plants (24 ft) were harvested. The NCR trial consisted of three replicates of 25 plants (20 ft).

Trials were conducted under center-pivot irrigation except at Scottsbluff where it was under a linear-move system.

The season was generally characterized as a normal May and June with some hail in late June, wet and hot late July, dry and cool early August, and wet and hot late August. Rainfall tended to be above normal in mid-June and late July. Temperature was above normal in late July and late August.

Yield data were taken on tubers under and over 1 7/8 inch diameter. Within two weeks after harvest, visual tuber defects were determined and so was specific gravity using a hydrometer. Fry color after one month storage at 50° F was estimated with an SFA/PC color chart.

### Results and Discussion

**YIELD** (Tables 2a, 3a): The highest yields over three locations were white entries: Atlantic, ACBradord, CalWhite, MN16966, MSE018-1, and ND2470-27; russet entries: Rus. Burbank, Rus. Norkotah TX#112, Rus. Norkotah TX#278, MSB106-7, and TX1385-12 (Stampede Rus.); and red entries: ND5084-3R.

**SPECIFIC GRAVITY** (Tables 2b, 3b): Most white entries had average specific gravities above 1.080. The highest specific gravities, >1.088, were obtained from Atlantic (high yields), Snowden, MN16966 (also among highest yields), MSB076-2, MSE018-1 (also among highest yields), MSNT-1, and NDO1496-1. Among russet entries, the highest specific gravities were from Ranger Rus. (highest, ~1.080), A86-102-6, ATX84706-2, CO85026-4, ND4093-4, and possibly TX1385-12 (also among highest yields).

**COOKING COLOR** (Tables 2b, 3b): Light chips (1-2 rating) were produced by all white entries except CalWhite, which is meant for fresh market. Many russet entries fried acceptably (2-3 rating). Reds fried dark and in general were not acceptable for fry processing; CO89097-2 fried lightest. AC Bradord chipped acceptably. Yukon Gold was a dark chipper.

TUBER DEFECTS (Tables 2c, 2d, 3c, 3d):  
Entries with the following tuber defects were:

*Off-Shape*: among whites - AC Brador (Minden and Scottsbluff) and possibly MSA091-1 (Alliance); among russets (>5% at two locations) - Russet Burbank, Rus. Norkotah CO#3, ATX84706-2, CO85026-4, and possibly AC87-079-3 (>10% at Imperial).

*Common Scab*: among whites (>5% at Alliance and Scottsbluff) - Atlantic, Snowden, ND2470-27, MN16966, MSE263-10, NDO1496-1, NY112, and possibly (at Alliance) MSB076-2, MSE018-1, MSNT-1, and NY115; among russets (>5% at O'Neill and Scottsbluff) - CO85026-4, ATX84706-2, and TXAV657-27; among reds - CO89097-2 and DT6063-1R (Cherry Red).

*Vascular Discoloration* (at two sites): among whites - Atlantic, CalWhite and ND2470-27; among russets - Ranger Rus., Rus. Norkotah CO#8, Rus. Norkotah TX#102, A87-92-1, AC83-064-1 (Keystone Rus.), AC87-079-3, CO85026-4, CO89036-10, MSB106-7, and TX1385-12; and among reds - Super Red, CO86218-2, DT6063-1R, and ND5084-3R; and Yukon Gold.

#### EARLY BLIGHT SUSCEPTIBILITY:

*Most Susceptible* (more than Atlantic): among reds- Dark Red Norland, Super Red, CO86218-2, CO89097-2, DT6063-1R, and ND5084-3R; among russets- A86-102-6, MSB106-7, and ND4093-4; among whites- Atlantic 36, MSB076-2, MSNT-1, ND2676-10, and NY115; and Yukon Gold.

*Moderately Susceptible*: among russets- all R. Norkotah clones, A87-92-1, AC83-064-1, and ATX84706-2; among whites- Atlantic, Atlantic 6, MSE263-10, and ND2470-27.

#### *Slightly Susceptible*:

among russets- Ranger R., R. Burbank, A88-338-1, AC83-064-6, AC87-079-3, CO95026-4, CO89036-10, MN18713, TX1385-12, and TXAV657-27; among whites- CalWhite, Snowden, NDO1496-1, and NY112.

#### *Possibly Tolerant* (less than R. Burbank):

among russets- AC87-084-3 and AC87-138-4; among whites- ATX85404-8, MN16966, MSA091-1, and MSE018-1; and AC Brador.

#### MATURITY:

*Very Very Early*: among reds- Dark Red Norland, Super Red, and DT6067-1R.

*Very Early*: among reds- CO86218-2 and CO89097-2; among russets- ND4093-4; among whites- Atlantic 36 and NY115; and among yellows- Yukon Gold.

*Early*: among russets- R. Norkotah, R. Norkotah 278, A86-102-6, ATX84706-2, and MSB106-7; among whites- Atlantic, Atlantic 6, MSB076-2, MSE263-10, MSNT-1, ND2470-27, and ND2676-10.

*Medium*: among reds- ND5084-3R; among russets- R. Norkotah 8, R. Norkotah 102, R. Norkotah 223, AC83-064-1, AC83-064-6, MN18713, TX1385-12, and TXAV657-27; among whites- NDO1496-1, and NY112.

*Late*: among russets- R. Norkotah 3, R. Norkotah 112, A87-92-1, CO85026-4, and CO89036-10; among whites- CalWhite, Snowden, ATX85404-8, MN16966, MSA091-1, and MSE018-1.

*Very Late*: among russets- Ranger R., R. Burbank, A88-338-1, AC87-079-3, AC87-084-3, and AC87-138-4; and AC Brador.

Nebraska Table 1. Key dates for each trial, 1999.

	Alliance	Imperial	Minden	O'Neill	Scottsbluff
Planting	5/4	4/14	4/28	4/29	5/17
Emerged	5/~25	5/~12	5/24	5/27	6/8
Death	8/25	8/30	--	8/30	9/28
Harvest	9/9	9/20	9/15	9/16	9/29
planting to death	113	138	140	123	134
emerged to death	92	110	114	95	112

Nebraska Table 2a. Yields at Alliance (ALL), Minden (MIN) and Scottsbluff (SBF).

Chipping Entries	Total Yield, cwt/ac				Yield of >1 7/8" Tubers			
	ALL	MIN	SBF	ave.	ALL	MIN	SBF	ave.
Atlantic	361	719	363	481	328	682	363	458
Atlantic 6	276	559	399	411	255	545	393	398
Atlantic 36	303	545	387	412	273	508	381	387
AC Brador *	367	849	405	540	343	813	405	520
CalWhite	367	813	381	520	349	770	375	498
Snowden	319	668	369	452	282	646	363	430
ATX85404-8	312	653	417	461	261	624	411	432
MN16966	282	849	303	478	240	791	296	442
MSA091-1	273	501	399	391	252	436	393	360
MSB076-2	261	545	151	319	228	501	151	293
MSE018-1	273	820	351	481	240	777	345	454
MSE263-10	261	450	284	332	234	421	278	311
MSNT-1	218	377	333	309	164	334	321	273
ND2470-27	385	813	448	549	352	784	436	524
ND2676-10	331	595	296	407	279	574	296	383
NDO1496-1	355	574	303	411	331	552	303	395
NY112	319	610	502	477	282	581	502	455
NY115	306	545	333	395	288	508	327	374
site means:	309	638	340	429	277	603	337	406
LSD (0.05):	71		71		* yellow-fleshed			

**Nebraska Table 2d.** Tuber Quality -- Black Scurf and Vascular Discoloration at Alliance (ALL), Minden (MIN) and Scottsbluff (SBF).

Chipping Entries	Black Scurf			Miscellaneous		
	ALL	MIN	SBF	ALL	MIN	SBF
Atlantic	19	0	0	1VD	1HH,1VD	—
Atlantic 6	10	0	0		1HH,3IN,1VD	
Atlantic 36	46	0	11	2VD	1HH	1VD
AC Brador	0	0	0			
CalWhite	9	0	0	2VD	1VD	
Snowden	1	0	0	2VD		
ATX85404-8	0	0	0	1VD		
MN16966	26	0	0		1IN	1VD
MSA091-1	0	0	0	3VD	1IN	1HH
MSB076-2	0	0	3			
MSE018-1	14	0	0			1VD
MSE263-10	3	0	0			2VD
MSNT-1	5	0	1			
ND2470-27	0	0	0	2VD	1VD	
ND2676-10	9	1	0	1VD		
NDO1496-1	11	0	3			
NY112	0	0	0			4VD
NY115	45	0	0			
site means:	11	<1	1			

HH = hollow heart; IN = internal necrosis; VD = vascular discoloration;

**Nebraska Table 2b.** Specific Gravity and Fry Color at Alliance (ALL), Minden (MIN) and Scottsbluff (SBF).

Chipping Entries	Specific Gravity, (10 <sup>-3</sup> )+1				Chip Color Chart			
	ALL	MIN	SBF	ave.	ALL	MIN	SBF	ave.
Atlantic	96	86	89	90	1	1	1	1
Atlantic 6	98	95	85	93	1	1	2	1⅓
Atlantic 36	94	86	90	90	1	1	1	1
AC Brador	86	79	82	82	1	2	3	2
CalWhite	84	75	73	77	2	2	3	2⅔
Snowden	91	85	87	88	1	1	2	1⅓
ATX85404-8	93	77	84	85	1	1	1	1
MN16966	94	89	85	89	1	1	2	1⅓
MSA091-1	84	85	84	84	1	1	1	1
MSB076-2	100	81	91	91	1	1	1	1
MSE018-1	97	85	87	90	1	1	2	1⅓
MSE263-10	79	75	79	78	1	1	2	1⅓
MSNT-1	93	83	90	89	1	1	2	1⅓
ND2470-27	79	85	70	78	1	1	1	1
ND2676-10	84	70	78	77	1	1	1	1
NDO1496-1	88	88	90	89	1	1	1	1
NY112	81	81	76	79	1	1	1	1
NY115	77	73	83	78	1	1	1	1
site means:	88	82	76	82	1	1¼	1½	1¼

Fry Color: 1 = lightest to 5 = darkest. Color rating greater than 2 may be unacceptable for chips and greater than 3 may be unacceptable for fries.

**Nebraska Table 2c.** Tuber Quality -- Off-Shape and Common Scab --  
at Alliance (ALL), Minden (MIN) and Scottsbluff (SBF).

Chipping Entries	Off-Shape				Common Scab			
	ALL	MIN	SBF	ave.	ALL	MIN	SBF	ave. (A+S)
Atlantic	0	3	0	1	27	0	5	16
Atlantic 6	0	1	0	0	40	0	12	26
Atlantic 36	3	0	0	1	36	1	18	27
AC Brador	0	12	11	8	5	0	0	2
CalWhite	3	9	4	5	6	0	0	3
Snowden	0	0	0	0	12	0	13	13
ATX85404-8	0	0	2	1	6	0	0	3
MN16966	0	1	5	2	13	0	6	9
MSA091-1	9 *	2	2	4	0	0	0	0
MSB076-2	0	3	2	2	13	0	0	7
MSE018-1	0	2	1	1	25	0	0	13
MSE263-10	1	1	0	1	11	0	5	8
MSNT-1	0	0	0	0	14	0	2	8
ND2470-27	1	2	0	1	40	0	8	24
ND2676-10	1	2	1	1	3	1	2	3
NDO1496-1	0	0	0	0	23	0	5	14
NY112	0	0	0	0	12	0	6	9
NY115	0	0	0	0	35	0	1	18
site means:	1	2	4	2	18	<1	7	11

\* Severe malformation was noted at harvest. \*\* 6% was severe pitted scab.

Nebraska Table 3a. Yields at Imperial (IMP), O'Neill (O'N) and Scottsbluff (SBF).

Table Entries	Total Yield, cwt/ac				Yield of >1½" Tubers			
	IMP	O'N	SBF	ave.	IMP	O'N	SBF	ave.
Ranger Russet *	353	442	333	376	316	408	327	350
Rs. Burbank *	467	387	387	414	416	352	381	383
Rs. Norkotah *	385	373	296	351	353	359	290	334
Rs. Norkotah #3 *	271	518	321	370	240	491	321	351
Rs. Norkotah #8 *	379	525	351	418	328	498	345	390
Rs. Norkotah #102 *	259	304	296	286	233	276	296	268
Rs. Norkotah #112 *	423	442	375	413	385	408	375	389
Rs. Norkotah #223 *	391	394	339	375	341	359	339	346
Rs. Norkotah #278 *	454	470	345	423	379	442	345	389
A86-102-6 *	441	352	303	365	410	339	303	351
A87-92-1 *	410	214	351	325	366	207	351	308
A88-338-1 *	360	339	224	308	341	318	224	294
AC83-064-1 *	259	415	369	348	227	380	369	325
AC83-064-6 *	215	394	393	334	189	366	393	316
AC87-079-3 *	309	435	242	329	284	415	242	314
AC87-084-3 *	233	408	145	262	202	359	145	235
AC87-138-4 *	284	352	405	347	240	297	399	312
ATX84706-2 *	366	428	345	380	260	422	345	342
CO85026-4 *	316	339	309	321	297	318	309	308
CO89036-10 *	233	422	284	313	208	394	284	295
MN18713 *	360	346	242	316	303	304	230	279
MSB106-7 *	536	567	393	499	505	532	387	475
ND4093-4 *	442	373	339	385	298	352	333	328
TX1385-12 *	--	498	411	--	--	491	411	--
TXAV657-27 *	--	380	315	--	--	339	315	--
Dark Red Norland **	416	256	248	307	398	235	248	294
Super Red **	486	256	339	360	461	235	339	345
CO86218-2 ***	366	359	357	361	328	339	339	335
CO89097-2 **	404	352	351	369	366	339	351	352
DT6063-1R **	473	304	272	350	454	290	260	335
ND5084-3R **	505	442	526	491	429	401	520	450
Yukon Gold ****	366	346	387	366	353	332	387	357
site means:	372	388	340	367	337	362	337	345

\* russet; \*\* red; \*\*\* purple; \*\*\*\* yellow



Nebraska Table 3b. Specific Gravity and Fry Color at Imperial (IMP), O'Neill (O'N) and Scottsbluff (SBF).

Entries	Specific Gravity, (10 <sup>-3</sup> )+1				Chip Color Chart			
	IMP	O'N	SBF	ave.	IMP	O'N	SBF	ave.
Ranger Russet *	67	83	87	79	3	3	2	2⅔
Rs. Burbank *	65	74	72	70	3	3	3	3
Rs. Norkotah *	65	65	65	65	4	3	3	3⅓
Rs. Norkotah #3 *	65	70	73	69	4	3	4	3⅔
Rs. Norkotah #8 *	65	72	70	69	4	3	4	3⅔
Rs. Norkotah #102 *	65	66	72	68	5	3	4	4
Rs. Norkotah #112 *	65	73	65	68	3	2	4	3
Rs. Norkotah #223 *	65	72	66	68	4	4	4	4
Rs. Norkotah #278 *	65	70	75	70	3	3	3	3
A86-102-6 *	68	74	83	75	3	3	3	3
A87-92-1 *	65	67	71	68	2	2	3	2⅓
A88-338-1 *	65	<64	74	68	4	3	3	3⅓
AC83-064-1 *	65	<64	65	65	4	3	3	3⅓
AC83-064-6 *	65	<64	65	65	3	3	2	2⅔
AC87-079-3 *	65	66	78	70	3	3	3	3
AC87-084-3 *	65	64	70	66	4	4	3	3⅔
AC87-138-4 *	65	69	75	70	4	3	2	3
ATX84706-2 *	65	75	75	72	3	2	2	2⅓
CO85026-4 *	65	78	77	73	3	2	4	3
CO89036-10 *	65	70	75	70	5	5	4	4⅔
MN18713 *	65	65	77	69	4	2	1	2⅓
MSB106-7 *	65	<64	70	66	4	4	3	3⅔
ND4093-4 *	65	73	76	71	2	3	3	2⅔
TX1385-12 *	--	77	69	--	--	2	2	--
TXAV657-27 *	--	71	80	--	--	2	3	--
Dark Red Norland **	65	<64	67	65	5	3	3	3⅔
Super Red **	65	<64	<64	64	4	4	4	4
CO86218-2 ***	65	71	73	70	5	3	3	3⅔
CO89097-2 **	65	65	75	68	4	3	2	3
DT6063-1R **	65	71	81	72	4	4	3	3⅔
ND5084-3R **	65	<64	<64	64	5	4	4	4⅓
Yukon Gold ****	72	67	85	75	3	2	2	2⅓
site means:	65	69	76	70	3⅔	3	3	3¼

\* russet; \*\* red; \*\*\* purple; \*\*\*\* yellow

Fry Color: 1 = lightest to 5 = darkest. Color rating greater than 2 may be unacceptable for chips and greater than 3 may be unacceptable for fries.

**Nebraska Table 3c.** Tuber Quality -- Off-Shape and Common Scab -- at Imperial (IMP), O'Neill (O'N) and Scottsbluff (SBF).

Entries	Off-Shape				Common Scab			
	IMP	O'N	SBF	ave.	IMP	O'N	SBF	ave. (O+S)
Ranger Russet *	5	4	2	4	0	0	0	0
Rs. Burbank *	6	8	6	7	0	0	0	0
Rs. Norkotah *	2	0	4	2	0	0	0	0
Rs. Norkotah #3 *	6	3	15	8	0	0	0	0
Rs. Norkotah #8 *	3	2	8	4	0	0	0	0
Rs. Norkotah #102 *	3	2	2	2	0	0	0	0
Rs. Norkotah #112 *	1	1	17	6	0	0	3	2
Rs. Norkotah #223 *	3	0	10	4	0	0	0	0
Rs. Norkotah #278 *	1	1	10	4	0	0	0	0
A86-102-6 *	5	4	5	5	0	0	0	0
A87-92-1 *	2	3	10	5	0	0	0	0
A88-338-1 *	4	4	4	4	0	0	0	0
AC83-064-1 *	6	1	2	3	0	0	0	0
AC83-064-6 *	0	0	3	1	0	0	0	0
AC87-079-3 *	18	1	4	8	0	0	0	0
AC87-084-3 *	2	1	1	1	0	0	0	0
AC87-138-4 *	2	0	7	3	0	0	0	0
ATX84706-2 *	5	5	7	6	0	6	0	3
CO85026-4 *	2	11	10	8	0	21	5	13
CO89036-10 *	2	0	2	1	0	0	0	0
MN18713 *	1	4	4	3	0	0	0	0
MSB106-7 *	2	3	3	3	0	0	0	0
ND4093-4 *	3	2	7	4	0	0	0	0
TX1385-12 *	--	0	6	--	--	2	0	--
TXAV657-27 *	--	4	4	--	--	8	0	--
Dark Red Norland **	0	2	0	1	0	0	0	0
Super Red **	2	1	0	1	0	0	2	1
CO86218-2 ***	2	2	2	2	0	0	1	1
CO89097-2 **	3	0	1	1	0	7	8	8
DT6063-1R **	0	2	1	1	0	5	1	3
ND5084-3R **	2	0	0	1	0	0	1	1
Yukon Gold ****	2	2	0	1	0	0	4	2
site means:	3	2	4	3½	0	2	2	1

\* russet; \*\* red; \*\*\* purple; \*\*\*\* yellow

**Nebraska Table 3d.** Tuber Quality -- Black Scurf and Vascular Discoloration at Imperial (IMP), O'Neill (O'N) and Scottsbluff (SBF).

Entries	Black Scurf			Miscellaneous		
	IMP	O'N	SBF	IMP	O'N	SBF
Ranger Russet *	0	0	0		2VD	1VD
Rs. Burbank *	0	0	0			1HH,1VD
Rs. Norkotah *	0	0	0			3VD
Rs. Norkotah #3 *	0	0	0		2VD	3HH
Rs. Norkotah #8 *	0	0	0	2VD	1VD	2HH
Rs. Norkotah #102 *	0	0	0	4VD	2VD	2HH
Rs. Norkotah #112 *	0	0	0	1VD		1VD
Rs. Norkotah #223 *	0	0	0			1HH,1VD
Rs. Norkotah #278 *	0	0	5			
A86-102-6 *	0	0	6	1HH	1VD	
A87-92-1 *	0	0	0		2VD	1HH,2VD
A88-338-1 *	0	0	0	1VD		
AC83-064-1 *	0	0	0	1VD	7VD	
AC83-064-6 *	0	0	0			2HH
AC87-079-3 *	0	0	0	8VD,(1)	1HH,1VD	2GC,5HH
AC87-084-3 *	0	0	0		2VD	4HH
AC87-138-4 *	0	7	0			2HH
ATX84706-2 *	0	0	0	1HH		1HH,2VD
CO85026-4 *	0	0	0		3VD	2VD
CO89036-10 *	0	0	0		1VD	1HH,3VD
MN18713 *	0	0	0		6VD	
MSB106-7 *	0	0	0	1VD	2VD	4GC,2VD
ND4093-4 *	0	0	4			1HH,4VD
TX1385-12 *	--	0	0	--	3VD,(2)	2VD
TXAV657-27 *	--	0	0	--	1VD	
Dark Red Norland *	0	0	0		1HH,2VD	
Super Red **	0	0	0	7HH,2VD	1VD	
CO86218-2 ***	0	0	0	3VD	13VD	2VD
CO89097-2 **	0	0	0			1VD
DT6063-1R **	0	0	0	1VD	1VD	2GC
ND5084-3R **	0	0	2	4VD	4VD	
Yukon Gold ****	0	12	0	2VD	1VD	6VD
site means:	0	1	1			

\* russet; \*\* red; \*\*\* purple; \*\*\*\* yellow

GC = growth cracks; HH = hollow heart; VD = vascular discoloration;

(1) appears like sweet potato

(2) all tubers sprouting

New Jersey

Melvin R. Henninger

Trials were conducted at the Rutgers Agricultural Research and Extension Center (RAREC) in Upper Deerfield Township and The Snyder Research and Extension Farm near Pittstown. All plots were 21' long and 3' wide. Seedpieces were spaced at 9" for round types and 12" for long types.

At the RAREC location, 50 lbs./A of nitrogen,  $P_2O_5$ , and  $K_2O$  were applied before planting and disked in. An additional 100 lbs./A of nitrogen was topdressed 5 weeks after planting to bring the total up to 150 lb/A. Prowl 4EC was applied immediately after planting and Dual and Metribuzin were applied over the top during the hilling operation. The plots were harvested with a single-row mount commercial harvester modified for bagging. No attempt was made to recover any lost tubers caused by normal harvester operation. All plots were sized with a spool sizer and specific gravities were determined by weight in air and water. Chip color was done by Mr. Steve Molnar of Wise Foods seven days after harvest.

At the Snyder Farm, 333 lbs./A of 15-15-15 was broadcast and disked in before planting. An additional 100 lbs./A of nitrogen was topdressed 5 weeks after planting to bring the total up to 150 lb/A. Dual and Metribuzin were applied shortly after planting and Matrex and additional Dual and Metribuzin immediately after hilling. The plots were harvested with a single-row commercial potato digger. Round types were sized with a spool sizer, the long types were sized by weight, and specific gravities were determined by weight in air and water.

In 1999, planting was normal and growing conditions were cool early, but hot and dry in July. Rainfall was supplemented by frequent irrigations. Ozone levels were high in early July and some varieties were damaged. Insects and diseases were not a limiting factor to growth.

To simplify above information, trade names of some products are used. No endorsement is intended, nor is criticism implied of similar products not named. Many people assisted in conducting these experiments. Special credit and thanks to Bill Pompper and Ed Dager, the Farm Supervisors at RAREC and the Snyder Farm, respectively and their crews for planting, irrigating, scouting, spraying, harvesting and grading these plots.

**New Jersey Table 1.** Yield, specific gravity, and tuber sizes for 24 round white potato varieties, harvested **Main Season** and grown on a sandy loam soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1999(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
Kennebec	ne	713	598	157	1.065	96	64	64	13	4	32	46	18	0
NY 101	ne	653	585	154	1.070	95	58	58	6	5	37	46	11	0
NY 112	ne	609	578	152	1.072	98	76	76	3	2	22	53	22	1
AF1615-1	ne	618	572	150	1.067	96	60	60	4	4	36	50	10	0
Snowden	ne	593	556	146	1.081	97	54	54	3	3	42	44	10	0
Katahdin	ne	576	534	140	1.063	96	64	64	4	4	32	51	13	0
AF1921-9	me	573	529	139	1.066	97	73	73	5	3	23	42	31	0
NY 120	ny	520	491	129	1.072	98	81	81	4	2	17	44	36	0
Atlantic	ne	507	475	125	1.080	96	56	56	2	4	40	46	11	0
NY 103	ne	516	471	123	1.067	97	75	75	6	3	22	55	19	1
B0766-3	ne	506	468	123	1.076	98	77	77	5	2	20	45	32	0
AF1938-3	me	490	446	117	1.069	97	67	67	7	3	31	52	15	0
AF1950-1	me	500	445	117	1.071	98	77	77	9	2	21	52	24	1
AF1949-1	me	491	424	111	1.077	95	62	62	9	5	33	45	17	0
NY 115	ne	458	423	111	1.065	96	50	50	4	4	46	47	3	0
NY E11-45	ny	429	385	101	1.051	94	59	59	6	6	35	54	5	0
Superior	ne	430	381	100	1.063	96	61	61	8	4	35	55	6	0
NY 123	ny	410	366	96	1.075	96	44	44	7	4	52	40	4	0
AF1437-1	ne	424	363	95	1.049	96	67	67	11	4	29	55	12	1
AF1753-16	me	544	345	90	1.076	95	51	51	33	5	44	47	5	0
AF1896-2	me	352	307	81	1.071	91	21	21	4	9	70	18	3	0
NY 121	ny	349	284	74	1.067	85	26	26	4	15	59	22	4	0
AF1907-6	me	301	267	70	1.054	95	62	62	8	5	34	46	15	1
AF1753-12	me	279	248	65	1.062	96	50	50	8	4	46	36	13	0
CV (4)		10	11			2	7	7	4	2	7	8	6	ns
W-D Bayes LSD.05		63	63		.005									

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/06, and harvested on 8/12.

(2) me = Univ. of Maine, ne = NE Regional Project, ny = Cornell University.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of variation; W-D Bayes LSD (.05)= Waller Duncan test for least significant difference.

**New Jersey Table 2.** Plant and tuber characters, tuber defects, chip color and overall rating for varieties and seedlings grown in Upper Deerfield, NJ 1999 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS(2)							OVER		Comments
	P	A	M	S	C	T	S	D	T	G	H	S	B	H	H	N	R	CC	ALL	
Kennebec	9	8	1	1	8	8	5	5	7	8	9	3	9	0	0	4	8		std	heat sprouts
NY 101	9	8	3	3	8	7	2	7	8	8	9	9	9	3	3	32	6		no	heat necrosis
NY 112	7	8	4	4	6	6	2	8	8	9	9	9	9	6	6	23	6	3	yes	ch-only
AF1615-1	7	8	1	1	8	9	2	6	6	9	9	9	9	4	4	1	8		no	poor app
Snowden	7	7	3	3	7	6	3	6	8	9	9	9	9	0	0	9	7	3	std	
Katahdin	8	8	1	1	8	8	2	4	7	8	9	9	9	2	2	22	7		std	
AF1921-9	7	8	4	4	8	7	3	7	7	9	9	9	9	8	8	15	7	4	ok+	field rot
NY 120	7	7	5	5	6	6	3	7	7	8	9	9	9	0	0	5	7	3	ok+	heavy net
Atlantic	7	8	5	5	6	6	2	8	8	9	9	9	9	0	0	35	6	4	std	
NY 103	8	8	6	6	8	8	2	8	9	9	9	9	9	6	6	9	7	3	yes	nice tubers
B0766-3	7	8	5	5	8	7	2	8	8	7	9	7	9	5	5	5	8	3	yes	nice tubers
AF1938-3	5	7	2	2	8	8	3	7	8	9	9	9	9	1	1	4	8	4	yes	late
AF1950-1	8	8	4	4	8	7	3	8	6	8	6	9	9	7	7	3	7		no	growth cracks
AF1949-1	8	7	1	1	7	7	3	5	6	7	6	9	9	0	0	11	7		ok	growth cracks
NY 115	7	6	8	8	8	8	2	4	6	9	9	9	9	1	1	4	8		ok+	bright white
NY E11-45	6	7	3	3	9	9	3	5	8	7	9	9	9	0	0	12	6	3	ok+	bright white
Superior	7	7	8	8	8	6	4	5	7	9	9	9	9	0	0	9	7	4	std	
NY 123	6	5	6	6	8	8	2	5	7	8	9	9	9	0	0	1	8		no	field rot
AF1437-1	7	7	6	6	8	7	2	7	8	6	9	6	9	0	0	1	8		no	many defects
AF1753-16	8	7	3	3	5	4	8	7	3	2	8	6	9	2	2	0			no	many defects
AF1896-2	5	6	4	4	8	7	4	7	7	7	9	9	9	0	0	14	7		no	knobs
NY 121	5	6	8	8	8	8	2	8	8	9	9	9	9	0	0	2	8		no	poor yield
AF1907-6	6	7	2	2	9	9	2	7	8	9	9	9	9	9	9	22	6		no	heat necrosis
AF1753-12	4	5	8	8	7	6	5	7	5	9	9	9	9	0	0	5	8		no	field rot

(1) See NE-184 rating table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of hollow heart tubers out of 40. HN = No. of heat necrosis tubers out of 40 cut.



**New Jersey Table 3.** Yield, specific gravity, and tuber sizes for 24 round white potato varieties, harvested **Late Season** and grown on a sandy loam soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1999(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% Of Sup.		1	7/8	2 1/2		1	2	3	4	5
NY R17-7	ny	593	550	142	1.064	95		56	3	5	40	46	9	0
B1709-6	cf	561	521	135	1.076	96		68	4	4	29	53	15	0
Salem	ny	576	514	133	1.056	96		64	7	4	32	44	19	1
B0564-8	cf	557	510	132	1.074	92		54	1	8	38	41	14	0
Reba	ny	519	491	127	1.071	97		63	3	3	34	52	11	0
NY S32-3	ny	521	484	125	1.076	96		57	3	4	39	44	13	1
Atlantic	ne	494	462	120	1.077	96		57	3	4	39	45	12	0
B0178-34	cf	500	462	120	1.083	96		69	4	4	27	49	21	0
B0766-3	cf	484	453	117	1.069	98		72	4	2	26	47	25	0
NY S28-2	ny	483	446	116	1.071	95		50	3	5	45	47	3	0
B1440-18	cf	508	444	115	1.064	95		54	8	5	42	46	7	0
AF875-15	me	485	436	113	1.079	97		68	8	3	29	54	14	0
NY S14-2	ny	454	420	109	1.079	96		62	4	4	35	47	14	0
NY S33-5	ny	425	398	103	1.071	97		66	4	3	31	51	16	0
B1349-12	cf	454	394	102	1.079	89		38	3	11	51	36	2	0
B0564-9	cf	418	390	101	1.068	96		64	3	4	32	45	19	0
Superior	ne	423	386	100	1.063	96		58	5	4	37	50	8	1
B1352-1	cf	420	376	97	1.089	97		67	8	3	30	60	7	0
B1065-51	cf	368	343	89	1.060	96		55	3	4	41	51	4	0
NY R17-106	ny	368	332	86	1.065	93		53	4	7	40	40	12	1
B1351-6	cf	346	282	73	1.075	92		36	11	8	55	34	2	0
B1711-8	cf	326	280	73	1.066	90		28	5	10	62	27	1	0
Andover	ny	286	260	67	1.071	94		44	2	6	49	39	5	0
B1348-8	cf	294	257	67	1.076	96		59	9	4	36	54	6	0
CV (4)		10	11			2		9	4	2	9	7	7	ns
W-D Bayes LSD.05		55	57		.006									

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/06, and harvested on 8/10.

(2) cf = USDA Chapman Farm, ne = NE Regional Proj., ny = Cornell Univ.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) CV=Coef of variation; W-D Bayes LSD (.05)= Waller Duncan test for least significant difference.

**New Jersey Table 4.** Plant and tuber characters, tuber defects, chip color and overall rating for varieties and seedlings grown in Upper Deerfield, NJ 1999 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS(2)							OVER		Comments					
	P	A	M	S	S	T	X	L	C	I	D	P	a	S	G	H	S				B	H	N	R	CC
NY R17-7	6	6		6	8	8	3	8	8					8	8	9	9	9	9	1	5	8	3	yes	field rot
B1709-6	7	8		6	8	7	3	7	7					9	6	9	9	9	23	9	7	3	ok+	hollow heart	
Salem	7	7		3	8	8	2	6	7					6	9	9	9	9	0	5	7		yes	late	
B0564-8	7	8		8	7	6	2	8	8					7	9	9	9	9	0	0		2	yes	nice chips	
Reba	8	8		4	8	8	3	8	8					9	9	9	9	9	14	2	8	3	yes	hollow heart	
NY S32-3	8	7		7	7	7	2	8	7					9	9	9	9	9	8	19	6	3	yes	heat necrosis	
Atlantic	7	8		5	7	6	2	8	8					9	7	9	9	9	14	33	5		std		
B0178-34	8	8		5	8	8	2	8	7					8	9	7	9	9	3	20	7	4	yes	chipper	
B0766-3	6	7		5	8	7	3	7	7					9	7	9	9	9	9	5	7		yes	nice tubers	
NY S28-2	7	8		6	7	6	7	7	6					9	9	9	9	9	1	0			ok+	long white	
B1440-18	7	8		6	8	7	3	6	7					9	6	9	9	9	5	6	6		ok+	internal def	
AF875-15	7	7		5	8	8	2	5	6					9	9	8	9	9	0	0		3	yes	chips-only	
NY S14-2	7	7		7	7	6	2	7	7					9	7	9	9	9	4	1	8	3	yes	deep bud end	
NY S33-5	5	7		8	8	7	2	7	7					9	9	9	9	9	3	13	7	3	ok+	nice tubers	
B1349-12	7	8		7	8	7	6	5	7					8	9	9	9	9	0	0			no	poor tubers	
B0564-9	5	6		7	7	6	2	6	7					9	9	9	9	9	13	2	8	3	yes	chips	
Superior	6	8		8	8	7	3	5	6					9	9	9	9	9	2	7	8		std	growth cracks	
B1352-1	8	7		4	7	6	5	7	6					9	5	9	9	9	11	7	8		no	growth cracks	
B1065-51	6	6		8	6	5	3	8	7					9	5	9	9	9	0	1	5		no	nice chips	
NY R17-106	5	5		7	8	8	2	5	7					8	7	9	9	9	1	1	8	2	yes	growth cracks	
B1351-6	7	7		7	8	8	3	5	6					9	5	9	9	9	0	0			no	growth cracks	
B1711-8	7	7		6	7	6	6	7	5					9	9	9	9	9	2	30	6		no	heat necrosis	
Andover	6	5		6	7	7	2	6	8					9	7	9	9	9	3	0		2	yes	early, chips	
B1348-8	5	5		7	7	6	2	6	6					9	5	9	9	9	13	2	8		no	hollow heart	

(1) See NE-184 rating table for plant and tuber characters, tubers defects and chip color ratings.

(2) HH = No. of hollow heart tubers out of 40. HN = No. of heat necrosis tubers out of 40 cut.

**New Jersey Table 5.** Yield, specific gravity, and tuber sizes for 18 round white potato varieties, harvested **Late Season** and grown on a sandy loam soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1999(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield		Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
			cwt/a	% of Sup.		1	7/8	2 1/2		1	2	3	4	5
NY 101	ny	641	593	164	1.059	97		65	5	3	32	48	17	0
Kennebec	ne	673	578	160	1.063	96		67	11	4	29	44	23	0
Katahdin	ne	598	567	157	1.056	97		68	2	3	29	49	19	0
Snowden	cf	531	512	141	1.069	97		65	1	3	32	46	19	1
NY 120	ny	531	494	137	1.063	99		82	6	1	17	42	37	3
B0564-8	cf	543	491	136	1.071	93		50	3	7	42	37	13	0
Salem	ny	529	488	135	1.050	96		64	4	4	32	42	21	0
B0564-8 12"	cf	523	481	133	1.068	94		53	2	6	40	40	13	0
B0178-34	cf	509	479	132	1.078	96		71	2	4	25	51	20	0
Reba	ny	494	474	131	1.062	98		66	1	2	32	49	16	1
B0564-9	cf	499	469	130	1.066	97		69	3	3	28	42	25	2
Atlantic	ne	497	465	128	1.075	95		61	2	5	35	51	9	0
B0564-9 12"	cf	463	444	123	1.061	97		76	2	3	22	41	31	4
AF875-15	me	461	435	120	1.071	97		60	3	3	37	43	17	0
NY 103	ny	469	420	116	1.063	97		75	7	3	22	39	36	0
B0766-3	cf	413	392	108	1.058	98		71	3	2	28	46	23	2
Superior	ne	385	362	100	1.063	96		55	2	4	41	43	13	0
NY 115	ny	367	346	96	1.060	95		59	1	5	36	44	15	0
CV (4)		7	7											
W-D Bayes LSD.05		43	43		.007	1		7	2	1	7	7	7	2

- (1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/06, and harvested on 8/31.
- (2) cf = USDA Chapman Farm, me = Univ. of Maine, ne = NE Regional Project, ny = Cornell Univ.
- (3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
- (4) CV=Coef of variation; W-D Bayes LSD (.05)= Waller Duncan test for least significant difference.

**New Jersey Table 6.** Plant and tuber characters, tuber defects and overall rating for varieties and seedlings grown in Upper Deerfield, NJ 1999 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS(2)							OVER			
	P	A	M	S	C	T	S	h	p	a	T	S	G	H	S	B	H	N	R	ALL	Comments
NY 101	9	8		7	7	6	3	5	8	6	7	9	9	2	26	6	no	sl	yellow flesh		
Kennebec	9	8		4	8	8	5	6	4	5	6	7	9	0	0		std	knobs and green			
Katahdin	8	8		4	8	8	3	4	7	9	9	9	9	5	14	7	std	green			
Snowden	7	8		7	7	6	2	7	8	9	9	9	9	5	6	7	yes	ch-only			
NY 120	7	7		9	6	5	3	6	7	7	9	8	9	0	8	7	ok+	heavy net skin			
B0564-8	8	8		9	7	7	2	7	7	7	9	9	9	0	2	8	yes	very round tubers			
Salem	8	8		7	8	8	3	6	8	8	8	9	9	0	4	7	yes	late, table only			
B0564-8	8	7		9	7	6	2	8	8	8	9	8	9	3	0		yes	nice appear.			
B0178-34	8	8		7	8	7	3	6	7	8	9	8	9	3	14	6	yes	heat necrosis			
Reba	7	7		7	8	7	4	7	8	9	9	9	9	10	7	6	yes	hollow heart			
B0564-9	7	6		9	7	6	2	7	7	8	9	9	9	22	4	7	yes	hollow heart			
Atlantic	7	7		8	7	6	2	8	8	9	9	9	9	14	40	4	std				
B0564-9	7	7		9	7	7	2	8	8	9	9	9	9	34	9	4	yes	hollow heart			
AF875-15	7	8		8	8	7	3	5	6	7	9	8	9	6	1	8	yes	nice tuber size			
NY 103	8	8		8	8	8	4	6	7	7	9	9	9	5	7	7	yes	nice appearance			
B0766-3	7	7		8	7	7	4	6	6	8	8	9	9	17	4	8	ok+	hollow heart			
Superior	7	8		9	7	6	4	6	7	8	9	9	9	1	2	7	std				
NY 115	7	7		5	8	9	3	6	7	9	9	9	9	0	4	8	no	bright white			

(1) See NE-184 rating table for plant and tuber characters and tuber defects ratings.

(2) HH = No. of hollow heart tubers out of 40. HN = No. of heat necrosis tubers out of 40 cut.

**New Jersey Table 7.** Yield, specific gravity, and tuber sizes for 194 round potato seedlings, harvested **Main Season** and grown on a sandy loam soil at the Rutgers Agricultural Res. & Ext. Center - Upper Deerfield, NJ - 1999(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
AF1758-7	me	367	271	74	1.046	74	33	33	20	6	41	27	5	0
AF1763-2	me	391	339	92	1.051	87	34	34	7	7	53	34	0	0
AF1766-2	me	353	299	81	1.076	85	45	45	8	7	40	32	13	0
AF1771-2	me	488	428	116	1.093	88	61	61	10	2	27	44	16	0
AF1775-2	me	560	534	145	1.087	95	71	71	4	1	24	61	11	0
AF1845-7	me	304	257	70	1.063	85	23	23	1	14	62	23	0	0
AF1921-4	me	640	604	164	1.068	94	72	72	3	3	22	37	35	0
AF1935-6	me	519	474	129	1.073	91	62	62	3	5	30	62	0	0
AF1937-4	me	463	423	115	1.069	91	43	43	3	5	48	38	5	0
AF2001-4	me	377	299	81	1.064	79	18	18	10	11	61	18	0	0
AF2004-2	me	291	261	71	1.070	90	7	7	3	8	83	7	0	0
AF2005-2	me	377	295	80	1.066	78	2	2	3	19	76	2	0	0
AF2005-3	me	285	204	55	1.056	72	4	4	2	26	68	4	0	0
AF2015-16	me	503	464	126	1.073	92	72	72	3	5	20	48	24	0
AF2031-2	me	482	477	130	1.060	99	84	84	0	1	15	37	45	2
AF2032-1	me	366	324	88	1.073	89	32	32	3	8	57	30	2	0
AF2032-3	me	462	427	116	1.070	93	75	75	5	2	18	48	27	0
AF2047-2	me	422	376	102	1.065	89	50	50	9	2	39	47	3	0
B1066-73	cf	420	398	108	1.074	95	58	58	3	3	37	52	6	0
B1316-5	cf	635	590	160	1.085	93	69	69	4	3	24	53	15	0
B1316-13	cf	428	337	92	1.067	79	55	55	17	4	24	49	6	0
B1322-13	cf	427	372	101	1.077	87	26	26	0	12	61	22	4	0
B1322-19	cf	512	447	121	1.069	87	50	50	5	8	38	45	5	0
B1327-6	cf	449	419	114	1.068	93	70	70	5	2	23	53	17	0
B1337-13	cf	348	297	81	1.074	85	15	15	1	13	70	12	3	0
B1338-20	cf	204	193	52	1.069	95	45	45	0	5	50	39	6	0
B1339-12	cf	365	303	82	1.085	83	18	18	3	14	65	17	1	0
B1450-10	cf	496	394	107	1.072	79	25	25	6	14	54	23	2	0
B1497-22	cf	290	261	71	1.063	90	42	42	4	6	48	41	1	0
B1497-33	cf	462	362	98	1.069	78	33	33	12	10	45	29	5	0

New Jersey Table 7. (Continued)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5
B1625-8	cf	476	431	117	1.073	91	45	0	9	45	37	9	0	
B1712-18	cf	337	301	82	1.065	89	45	1	10	44	44	1	0	
B1714-2	cf	499	429	116	1.070	86	35	5	9	51	33	2	0	
B1722-5	cf	590	535	145	1.058	91	69	6	3	21	35	33	2	
B1801-3	cf	465	413	112	1.073	89	54	5	6	35	40	14	0	
B1801-6	cf	555	521	141	1.065	94	61	1	5	32	43	18	0	
B1805-6	cf	391	296	81	1.068	76	15	2	22	61	11	3	0	
B1806-8	cf	618	554	150	1.064	90	57	4	6	33	45	12	0	
B1818-5	cf	418	356	97	1.068	85	17	0	15	68	16	1	0	
B1823-3	cf	496	405	110	1.066	82	16	8	10	66	16	0	0	
B1825-5	cf	538	506	138	1.064	94	89	5	1	6	15	54	20	
B1826-1	cf	651	573	156	1.063	88	72	10	2	16	35	37	1	
B1828-4	cf	508	472	128	1.066	93	66	4	3	27	36	30	0	
B1829-4	cf	475	436	119	1.064	92	40	0	8	52	35	5	0	
B1829-5	cf	415	399	108	1.064	96	67	1	3	29	51	16	0	
B1830-2	cf	456	399	108	1.084	88	53	7	5	34	42	10	2	
B1834-1	cf	855	281	76	1.094	33	7	0	67	26	6	0	0	
B1834-3	cf	366	346	94	1.073	95	58	2	3	37	42	15	0	
B1834-5	cf	458	324	88	1.066	71	4	3	26	66	4	0	0	
B1856-10	cf	407	375	102	1.070	92	29	1	7	63	29	0	0	
B1868-2	cf	469	440	119	1.072	94	43	1	5	51	39	3	0	
B1870-3	cf	414	389	106	1.052	94	59	1	6	35	43	14	3	
B1870-17	cf	366	341	93	1.065	93	58	2	5	35	42	16	0	
B1871-1	cf	346	324	88	1.058	93	58	0	6	35	51	4	3	
B1871-7	cf	241	232	63	1.057	96	65	0	4	32	54	11	0	
B1872-1	cf	168	140	38	1.084	84	14	3	13	70	14	0	0	
B1872-8	cf	147	111	30	1.069	76	17	9	15	59	17	0	0	
B1873-4	cf	622	481	131	1.099	77	12	9	14	66	12	0	0	
B1873-6	cf	566	393	107	1.071	69	16	22	9	53	13	3	0	
B1874-1	cf	550	486	132	1.053	88	75	10	1	14	42	31	2	



New Jersey Table 7. (Continued)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (3)		
						1	7/8	2 1/2		1	2	3	4	5	
B1876-2	cf	271	234	64	1.084	86	46		10	4	40	43	4	0	
B1876-7	cf	422	389	106	1.063	92	68		6	2	25	49	19	0	
B1876-10	cf	301	287	78	1.057	95	58		0	5	37	44	14	0	
B1876-13	cf	269	259	70	1.065	96	59		2	2	37	52	7	0	
B1878-7	cf	528	499	136	1.059	95	78		4	1	17	41	34	3	
B1880-4	cf	487	436	119	1.070	90	47		3	7	42	41	6	0	
B1880-6	cf	592	504	137	1.068	85	39		7	7	47	32	6	0	
B1880-8	cf	459	365	99	1.059	80	54		17	4	25	47	8	0	
B1884-5	cf	591	521	141	1.085	88	58		7	5	30	41	17	0	
B1884-9	cf	431	413	112	1.061	96	59		2	2	37	48	11	0	
B1899-8	cf	597	467	127	1.070	78	17		9	12	62	16	1	0	
B1899-9	cf	698	637	173	1.074	91	55		5	3	36	55	1	0	
NY 112	ny	567	550	150	1.083	97	73		0	3	24	59	14	0	
NY T2-2	ny	480	449	122	1.069	94	77		3	3	17	49	28	0	
NY T3-5	ny	532	462	126	1.066	87	76		10	3	11	34	41	0	
NY T3-9	ny	427	400	109	1.066	94	57		2	4	36	52	6	0	
NY T3-11	ny	358	325	88	1.061	91	61		5	5	30	49	12	0	
NY T4-2	ny	520	464	126	1.078	89	36		4	7	53	33	3	0	
NY T4-7	ny	362	315	85	1.071	87	45		7	6	42	40	5	0	
NY T20-15	ny	492	442	120	1.067	90	53		2	8	37	38	13	1	
NY T27-13	ny	482	421	114	1.074	87	35		2	10	53	32	3	0	
NY T27-21	ny	512	484	132	1.067	95	45		2	3	50	43	2	0	
NY T28-1	ny	373	160	43	1.064	43	7		7	50	36	7	0	0	
NY T35-5	ny	434	384	104	1.073	89	71		10	1	17	50	20	2	
NY T35-19	ny	416	331	90	1.082	80	10		0	20	70	9	0	0	
NY T35-30	ny	267	250	68	1.072	94	59		3	4	35	45	13	0	
NY T35-34	ny	516	476	129	1.076	92	33		1	7	59	29	5	0	
NY T35-39	ny	397	362	98	1.078	91	51		4	4	40	38	13	0	
NY T36-13	ny	364	346	94	1.068	95	36		0	5	59	36	1	0	
NY T36-33	ny	234	223	61	1.065	95	58		2	3	37	46	12	0	

New Jersey Table 7. (Continued)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber S i z e s (3)				
						% O v e r				1	2	3	4	5
						1	7/8	2 1/2						
NY T37-3	ny	494	474	129	1.080	96	67	1	3	29	49	18	0	
NY T38-9	ny	429	386	105	1.073	90	24	0	10	66	22	2	0	
NY T43-27	ny	525	457	124	1.078	87	78	11	2	9	45	28	4	
NY T44-8	ny	382	277	75	1.078	73	47	26	2	26	38	9	0	
NY T45-7	ny	538	383	104	1.065	71	53	26	3	18	35	19	0	
ATX85404-8w	tx	524	493	134	1.082	94	55	3	3	39	40	15	0	
COTX90046-1w	tx	406	377	102	1.075	93	44	2	5	48	35	9	0	
COTX90046-2w	tx	661	627	170	1.066	95	59	1	4	36	49	8	2	
COTX90046-5w	tx	590	543	148	1.076	92	63	4	4	29	45	18	0	
W95-498-5	cf	231	172	47	1.066	75	0	0	25	75	0	0	0	
W95-500-2	cf	124	46	13	1.067	37	1	0	63	37	1	0	0	
W95-502-1	cf	300	258	70	1.063	86	26	0	14	60	23	3	0	
W95.0672-1	me	588	499	135	1.065	85	34	12	3	51	33	2	0	
W95.6498-1	me	328	286	78	1.068	87	19	0	13	69	19	0	0	
W95.6498-2	me	550	519	141	1.070	94	67	4	2	27	48	19	0	
W95.6498-5	me	584	535	145	1.073	92	38	0	8	54	32	6	0	
W95.6500-3	me	453	395	107	1.080	87	22	5	8	65	22	1	0	
W95.6527-1	me	480	447	121	1.082	93	48	3	4	45	38	9	0	
W95.6543-2	me	408	357	97	1.072	88	33	0	12	55	33	0	0	
W95.6543-3	me	609	261	71	1.077	43	13	7	50	30	12	1	0	
W95.6545-1	me	433	369	100	1.077	85	7	2	13	78	7	0	0	
W95.6545-3	me	497	402	109	1.090	81	59	16	3	22	37	22	0	
W95.6550-2	me	337	322	87	1.064	95	55	2	3	41	39	16	0	
W95.6553-1	me	581	540	147	1.071	93	61	0	7	32	21	39	0	
W95.6557-3	me	549	517	141	1.067	94	68	3	3	26	46	22	0	
W95.6558-2	me	217	130	35	1.062	60	18	29	11	42	17	1	0	
W95.6563-1	me	321	299	81	1.074	93	31	1	6	62	30	1	0	
W95.6645-2	me	464	440	119	1.069	95	70	2	3	25	44	25	1	
Superior Mean		391	368	100	1.062	94	50	1	5	44	44	5	0	
Atlantic Mean		487	471	128	1.080	97	66	1	2	31	50	15	0	

New Jersey Table 7. (Continued)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r					% Culls	% Tuber Sizes (3)				
						1	7/8	2	1 1/2	1		2	3	4	5	
Red Skinned Seedlings																
All Blue	cf	440	236	64	1.068	54		0		10	36	54	0	0	0	
B0811-4	cf	93	41	11	1.076	44		4		1	55	40	4	0	0	
B0852-7	cf	202	178	48	1.078	88		46		1	10	42	46	0	0	
B0967-11	cf	588	559	152	1.070	95		67		3	2	28	37	29	0	
B1102-3	cf	114	81	22	1.064	71		8		0	29	62	8	0	0	
B1145-2	cf	67	50	14	1.055	74		22		0	26	53	22	0	0	
B1425-9	cf	326	288	78	1.080	88		33		3	8	56	31	2	0	
B1491-5	cf	223	190	52	1.069	85		23		3	11	62	23	0	0	
B1492-12	cf	564	387	105	1.064	69		10		11	21	59	10	0	0	
B1495-6	cf	270	220	60	1.064	81		18		3	16	63	18	0	0	
B1495-15	cf	476	435	118	1.066	91		58		5	4	33	45	13	0	
B1521-2	cf	431	387	105	1.062	90		31		0	10	59	27	3	0	
B1523-4	cf	641	593	161	1.065	93		58		2	6	34	42	16	0	
B1524-2	cf	468	393	107	1.058	84		35		4	12	49	30	5	0	
B1526-1	cf	198	175	48	1.069	88		36		7	5	52	25	11	0	
B1529-1	cf	467	302	82	1.068	65		11		22	13	54	9	1	0	
B1752-5	cf	359	324	88	1.074	90		37		2	8	53	28	9	0	
B1758-3	cf	505	437	119	1.063	86		28		5	8	58	28	0	0	
B1758-4	cf	586	506	138	1.075	86		32		5	9	54	17	15	0	
B1761-1	cf	303	270	73	1.056	89		23		1	10	66	21	2	0	
B1763-4	cf	288	265	72	1.068	92		44		0	8	48	37	7	0	
B1763-5	cf	287	206	56	1.067	72		16		1	27	56	12	4	0	
B1809-3	cf	147	91	25	1.068	62		0		0	38	62	0	0	0	
B1811-1	cf	248	81	22	1.075	33		0		3	64	33	0	0	0	
B1816-5	cf	317	242	66	1.063	76		10		4	20	66	10	0	0	
Cherry Red	cf	324	281	76	1.066	87		28		3	10	58	27	1	0	
Chieftain	cf	594	521	142	1.072	88		52		8	4	36	43	9	0	
MN17922	mn	590	545	148	1.056	92		71		5	2	21	44	27	0	
MN17989	mn	194	187	51	1.053	97		64		0	3	33	37	27	0	
MN17993	mn	257	214	58	1.066	83		26		1	16	57	26	0	0	

New Jersey Table 7. (Continued)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber			Sizes (3)				
						1	7/8	2 1/2		1	2	3	4	5			
- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Red Skinned Seedlings																	
MN18365	mn	41	28	8	1.055	67	0	0	33	67	0	0	0	0	0	0	0
MN18772	mn	286	232	63	1.046	81	58	15	3	24	32	25	0	0	0	0	0
NorDonna	ne	449	383	104	1.062	85	26	3	11	60	25	1	0	0	0	0	0
Super Red																	
Norland	cf	310	264	72	1.048	85	60	10	5	25	36	24	0	0	0	0	0
Norland	cf	253	220	60	1.052	87	35	7	6	52	35	0	0	0	0	0	0
Dark Red																	
Norland	ne	304	279	76	1.057	92	37	2	6	55	34	3	0	0	0	0	0
NY T8-3	ny	351	296	80	1.053	84	17	1	14	67	16	1	0	0	0	0	0
NY T10-1	ny	449	336	91	1.053	75	6	0	25	69	6	0	0	0	0	0	0
NY T10-3	ny	274	242	66	1.058	88	34	2	9	55	34	0	0	0	0	0	0
NY T14-1	ny	283	269	73	1.066	95	39	0	5	56	36	3	0	0	0	0	0
NY T15-2	ny	232	186	51	1.060	80	29	9	11	51	29	0	0	0	0	0	0
NY T17-2	ny	357	289	79	1.077	81	4	0	19	77	4	0	0	0	0	0	0
Redsen	cf	152	131	36	1.069	86	17	2	11	69	17	0	0	0	0	0	0
NDTX731-1R	tx	431	409	111	1.055	95	77	2	3	18	46	29	2	2	2	2	2
Yukon Gold	ne	322	296	80	1.075	92	48	3	5	44	39	8	0	0	0	0	0
Russetted Skinned Seedlings																	
- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A81386-1	ne	212	176	48	1.067	83	23	4	13	60	23	0	0	0	0	0	0
A84095-1	ne	299	220	60	1.089	74	24	12	14	50	21	3	0	0	0	0	0
A84118-3	ne	196	164	45	1.072	84	6	5	12	78	6	0	0	0	0	0	0
A84180-8	ne	323	243	66	1.081	75	32	18	7	43	27	5	0	0	0	0	0
AF1156-14	me	241	65	18	1.077	27	0	69	4	27	0	0	0	0	0	0	0
AF1991-2	me	328	264	72	1.078	81	11	7	12	70	7	4	0	0	0	0	0
AF2004-3	me	360	315	85	1.075	88	32	6	6	56	27	5	0	0	0	0	0
AF2015-14	me	404	337	92	1.088	84	21	6	10	63	21	0	0	0	0	0	0
AF2018-4	me	243	189	51	1.071	78	48	19	3	30	41	7	0	0	0	0	0
AF2048-3	me	186	147	40	1.083	79	3	2	19	76	3	0	0	0	0	0	0

New Jersey Table 7. (Continued)

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r				% Culls	% Tuber Sizes (4)				
						4 oz	8 oz	16 oz	24 oz		1	2	3	4	5
Russetted Skinned Seedlings															
AO82611-7	ne	467	339	92	1.091	73	15	16	12	58	15	0	0	0	0
B1409-2	cf	536	411	112	1.093	77	43	18	5	34	33	10	0	0	0
B1890-19	cf	328	230	63	1.071	70	13	22	8	57	13	0	0	0	0
B9922-11	cf	342	304	83	1.089	89	55	7	4	34	46	9	0	0	0
MN18153	mn	381	349	95	1.080	92	44	3	5	47	32	12	0	0	0
MN18710	mn	359	288	78	1.075	80	22	10	10	58	16	6	0	0	0
MN18713	mn	241	186	51	1.082	77	17	6	17	60	17	0	0	0	0
MN18714	mn	287	210	57	1.084	73	38	18	9	35	30	8	0	0	0
Norkotah 3	ne	319	243	66	1.073	76	46	19	5	30	39	6	0	0	0
Norkotah3117	ne	166	138	37	1.073	83	30	8	9	53	26	4	0	0	0
Norkotah 8	ne	277	217	59	1.075	79	37	11	11	42	34	3	0	0	0
Shepody	ne	447	261	71	1.095	58	28	36	5	30	24	4	0	0	0
ATX84706-2Ru	tx	373	348	95	1.083	93	75	5	1	19	62	12	0	0	0
TXAV657-27Ru	tx	409	356	97	1.084	87	26	5	8	61	26	0	0	0	0
TXNS 102	tx	279	255	69	1.087	91	16	0	9	75	16	0	0	0	0
TXNS 112	tx	340	321	87	1.080	94	37	1	5	57	37	0	0	0	0
TXNS 223	tx	343	318	86	1.078	93	35	0	7	57	35	0	0	0	0
TXNS 278	tx	250	240	65	1.085	96	42	0	4	54	40	2	0	0	0
TXNS 296	tx	137	124	34	1.093	90	14	0	10	76	14	0	0	0	0
(1) Plots were 21' long and 3' wide with 1 rep. Seedpieces were spaced at 9" for the round varieties and 12" for the long varieties. They were planted on 4/07, and harvested on 8/11.															
(2) cf = USDA Chapman Farm, me = Univ. of Maine, mn = Univ. of Minnesota, ne = NE Regional Proj., ny = Cornell Univ. and tx = Texas A&M.															
(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.															
(4) Size 1= Under 4 oz., S2= 4 TO 8 oz., S3= 8 to 12 oz, S4= 12 to 16 oz. S5= Over 16 oz.															

(1) Plots were 21' long and 3' wide with 1 rep. Seedpieces were spaced at 9" for the round varieties and 12" for the long varieties. They were planted on 4/07, and harvested on 8/11.

(2) cf = USDA Chapman Farm, me = Univ. of Maine, mn = Univ. of Minnesota, ne = NE Regional Proj., ny = Cornell Univ. and tx = Texas A&M.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) Size 1= Under 4 oz., S2= 4 TO 8 oz., S3= 8 to 12 oz, S4= 12 to 16 oz. S5= Over 16 oz.

New Jersey Table 8. Plant and tuber characters, tuber defects and overall rating for varieties and seedlings grown in Upper Deerfield, NJ 1999 (1).

Variety	PLANT			TUBER CHARACTERS							TUBER DEFECTS (2)										OVER	
	P	A	M	S	C	T	S	D	T	S	G	H	S	B	H	N	R	ALL	Comments			
																				a	p	a
AF1758-7	6	7	5	5	8	8	6	7	3	6	7	9	9	9	0	0		no	poor appearance			
AF1763-2	5	6		8	8	8	7	4	5	7	9	9	9	9	0	1	8	no	poor appearance			
AF1766-2	6	7		9	7	6	3	6	7	9	9	9	9	9	0	1	6	no	low yield			
AF1771-2	6	7		9	7	6	3	7	7	9	9	9	9	9	0	10	5	no	heat necrosis			
AF1775-2	8	8		2	8	8	5	5	7	9	9	9	9	9	0	2	8	yes	late, good yield			
AF1845-7	4	6		7	7	6	2	6	6	9	9	7	9	9	0	0		no	low yield			
AF1921-4	7	8	4	5	8	8	2	6	6	9	9	9	9	9	0	0		yes	good yield			
AF1935-6	8	8		2	8	8	3	5	7	9	8	9	9	9	0	3	6	yes	late heat nec.			
AF1937-4	7	8		7	8	8	3	5	7	9	7	9	9	9	0	2	6	yes	heat necrosis			
AF2001-4	6	8		4	8	8	9	5	4	6	9	9	9	9	0	0		no	poor appearance			
AF2004-2	5	5		7	8	8	8	6	6	9	9	9	9	9	2	0		no	low yield			
AF2005-2	6	6		3	8	8	7	6	5	9	9	9	5	9	0	0		no	poor appearance			
AF2005-3	6	7		7	8	7	8	6	4	7	9	9	9	9	1	0		no	poor appearance			
AF2015-16	7	8		7	7	8	5	5	6	9	9	9	9	9	0	7	4	no	heat necrosis			
AF2031-2	6	7		3	8	8	3	5	6	9	9	9	9	9	1	1	7	ok+	poor appearance			
AF2032-1	5	6		5	7	7	5	5	6	9	9	9	9	9	1	0		no	poor appearance			
AF2032-3	7	7		5	8	8	5	6	6	9	9	7	9	9	1	3	7	ok	heat sprouts			
AF2047-2	6	6		5	8	8	7	6	6	9	7	9	9	9	0	0		no	air cracks			
B1066-73	8	8	9	5	8	7	4	8	7	9	6	9	9	9	1	0		ok	late			
B1316-5	8	8		2	8	8	3	6	6	9	9	7	9	9	2	6	7	yes	late			
B1316-13	6	7		5	8	8	3	7	7	9	5	9	9	9	0	2	8	no	growth cracks			
B1322-13	6	7		7	8	7	5	6	5	6	9	7	9	9	0	1	8	no	defects			
B1322-19	6	7		4	7	7	2	7	7	9	9	9	9	9	4	0		ok+	hollow heart			
B1327-6	7	8		7	7	6	5	6	7	9	9	9	9	9	3	0		yes	nice tubers			
B1337-13	7	7		8	8	8	3	7	6	9	9	9	9	9	1	0		no	lw yield			
B1338-20	4	5		7	8	8	3	6	6	9	9	9	9	9	0	6	5	no	heat necrosis			
B1339-12	7	7		7	7	7	3	7	7	9	8	9	9	9	3	0		ok	low yield			
B1450-10	9	8		5	8	8	2	8	7	7	7	9	9	9	0	0		ok-	small			
B1497-22	4	5		7	8	8	5	8	6	9	7	8	9	9	0	0		no	poor appearance			
B1497-33	6	7		5	7	6	3	7	7	9	9	9	9	9	0	0		ok+	defects			



New Jersey Table 8. (Continued.)

Variety	PLANT			TUBER CHARACTERS						TUBER DEFECTS(2)										OVER		
	P a	A p	M t	S s	TUBER			CHARACTERS			TUBER DEFECTS(2)										ALL	Comments
					C l	T x	S h	D p	T a	S G	H C	S S	B B	H H	N R	H N	R R					
B1625-8	7	7		7	7	6	2	8	8	9	9	9	9	9	0	0		yes	nice			
B1712-18	7	7		6	7	6	2	7	6	9	6	9	9	9	0	0		no	growth cracks			
B1714-2	6	7		8	8	7	5	5	6	9	9	9	9	9	0	1	7	ok+	good yield			
B1722-5	8	8		7	7	7	2	5	8	9	9	9	9	9	0	1	8	yes	good yield			
B1801-3	6	7		7	8	7	2	6	7	8	9	8	9	9	0	8	5	no	heat necrosis			
B1801-6	6	7		5	7	7	2	5	7	9	9	9	9	9	0	6	5	no	heat necrosis			
B1805-6	6	7		8	8	7	2	7	7	6	9	9	9	9	0	7	6	no	heat necrosis			
B1806-8	5	7		2	8	7	3	6	7	9	9	9	9	9	0	1	8	yes	good yield			
B1818-5	6	7		9	7	7	2	7	7	9	9	9	9	9	0	1	8	ok	so-so			
B1823-3	6	7		4	8	8	3	6	7	9	6	7	9	9	0	8	7	no	growth cracks			
B1825-5	8	7		4	7	7	2	8	7	8	7	8	9	9	8	7	5	no	heat necrosis			
B1826-1	7	7		5	8	8	3	8	8	7	9	9	9	9	0	3	7	yes	great '99			
B1828-4	7	8		3	7	6	3	6	8	7	9	6	9	9	0	9	6	no	heat necrosis			
B1829-4	7	8		8	8	7	3	6	6	9	9	9	9	9	2	5	6	no	heat necrosis			
B1829-5	6	7		7	8	8	2	7	7	9	7	9	9	9	0	1	7	no	so-so			
B1830-2	6	7		7	8	8	3	7	8	7	9	7	9	9	2	7	6	no	heat necrosis			
B1834-1	6	6		8	7	6	3	7	7	9	9	9	9	9	1	1	6	no	small			
B1834-3	6	6		7	8	7	2	5	7	9	7	9	9	9	1	8	6	no	heat necrosis			
B1834-5	6	6		6	8	8	7	7	6	9	7	9	9	9	0	0		no	so-so			
B1856-10	7	8		6	7	6	5	6	6	9	9	9	9	9	0	2	6	ok-	so-so			
B1868-2	7	7		8	7	7	5	6	6	9	9	9	9	9	1	6	6	no	heat necrosis			
B1870-3	6	7		8	7	6	1	8	8	8	7	9	9	9	0	1	8	yes	nice			
B1870-17	8	8		5	7	6	2	8	8	9	9	9	9	9	0	0		yes	nice tubers			
B1871-1	6	7		7	7	8	2	8	8	9	9	9	9	9	1	0		yes	nice tubers			
B1871-7	6	6		8	7	7	4	8	7	9	9	9	9	9	0	0		no	low yield			
B1872-1	4	7		9	7	7	2	8	7	9	9	9	9	9	0	0		no	small			
B1872-8	5	7		8	8	8	2	8	7	9	6	9	9	9	0	1	8	no	small			
B1873-4	8	8		3	8	7	3	6	6	6	6	9	9	9	0	2	8	no	defects			
B1873-6	6	7		8	7	6	1	8	8	9	9	9	9	9	0	0		ok+	small			
B1874-1	7	8		3	7	6	4	7	6	9	8	9	9	9	8	1	8	ok+	hollow heart			

New Jersey Table 8. (Continued.)

Variety	PLANT			TUBER CHARACTERS										TUBER DEFECTS (2)										OVER ALL	Comments
	P	A	P	M	S	S	C	T	S	h	D	T	a	S	G	H	S	B	H	N	R				
B1876-2	5	7			5	7	7	7	2	6	6			9	9	9	9	9	9	0	0		no	air cracks	
B1876-7	6	7			1	8	8	8	8	7	5			9	9	9	9	9	9	1	0		no	poor appearance	
B1876-10	5	7			5	8	8	8	2	8	8			9	8	9	9	9	9	0	0		ok+	low yield	
B1876-13	3	3			5	8	8	8	7	6	6			9	9	9	9	9	9	0	0		ok	small	
B1878-7	7	8			7	6	7	7	7	7	7			9	7	9	9	9	9	0	1	8	yes	air cracks	
B1880-4	6	7			6	8	8	8	3	6	7			7	9	9	9	9	9	0	0		yes	some green	
B1880-6	6	7			7	7	6	7	3	6	7			6	8	9	9	9	9	2	0		yes	knobs	
B1880-8	4	4		8	5	8	7	7	2	8	7			3	9	6	9	9	9	0	0		no	many knobs	
B1884-5	8	7			2	7	6	7	4	7	6			6	9	3	9	9	9	2	4	7	no	heat sprouts	
B1884-9	6	7																					try	good yield	
B1899-8	8	8			2	8	8	8	7	5	3			6	8	7	9	9	9	1	4	7	no	knobs	
B1899-9	7	7			1	9	9	9	8	5	6			9	8	9	9	9	9	0	1	5	no	poor appearance	
NY 112	7	7			4	7	6	7	3	8	8			9	9	9	9	9	9	0	7	6	yes	heat necrosis	
NY T2-2	8	7			5	7	7	7	4	7	7			9	7	9	9	9	9	3	0		yes	yellow flesh	
NY T3-5	8	7			5	8	8	8	3	5	5			9	6	9	9	9	9	5	0		no	yel fl, hollow	
NY T3-9	8	7			7	8	8	8	3	5	6			9	9	9	9	9	9	2	0		ok+	good yield	
NY T3-11	5	6			5	8	8	8	7	5	6			9	9	9	9	9	9	1	0		no	low yield	
NY T4-2	8	8			6	7	6	7	3	6	7			8	9	9	9	9	9	0	0		yes	good yield	
NY T4-7	7	7			7	8	7	7	4	7	6			9	7	9	9	9	9	1	0		ok	so-so	
NY T20-15	7	7			7	7	6	7	2	6	8			9	8	9	9	9	9	0	0		yes	nice tubers	
NY T27-13	7	8			7	7	7	7	2	7	7			9	9	9	9	9	9	0	4	6	yes	nice tubers	
NY T27-21	7	7			7	8	8	8	2	7	8			9	9	9	9	9	9	0	0		yes	nice tubers	
NY T28-1	5	5			8	7	8	7	2	7	7			9	9	9	9	9	9	0	0		no	low yield	
NY T35-5	7	8			4	8	8	8	3	5	6			9	7	9	9	9	9	2	0		ok-	poor appearance	
NY T35-19	6	6			8	7	8	7	2	6	7			9	9	9	9	9	9	0	0		ok	so-so	
NY T35-30	6	6			8	7	8	7	2	6	6			9	9	9	9	9	9	1	0		no	low yield	
NY T35-34	7	8			7	7	6	7	1	8	8			8	8	9	9	9	9	1	3	8	yes	nice tubers	
NY T35-39	7	8			7	8	9	7	2	7	7			9	9	9	9	9	9	0	0		ok+	so-so	
NY T36-13	7	6			8	7	7	7	2	8	8			9	9	9	9	9	9	0	1	8	ok+	nice tubers	
NY T36-33	6	5			7	8	8	8	3	5	5			9	9	9	9	9	9	0	0		no	poor appearance	

New Jersey Table 8. (Continued.)

Variety	PLANT			TUBER CHARACTERS								TUBER DEFECTS (2)								OVER ALL	Comments
	P	A	P	M	S	C	T	S	D	T	S	G	H	S	B	H	N	R			
NY T37-3	5	6	6		8	8	8	2	6	7		9	9	9	9	0	0		yes	good yield	
NY T38-9	5	6	6																try	so-so	
NY T43-27	7	8			5	7	7	3	5	6		7	8	9	9	1	5	7	no	poor appearance	
NY T44-8	7	8			8	8	7	3	7	7		9	8	9	9	1	1	7	no	air cracks	
NY T45-7	6	7			5	7	7	3	7	3		7	1	9	9	1	6	6	no	heat necrosis	
ATX85404-8w	9	8			2	8	8	3	3	6		8	9	9	9	1	0		ok+	very flat	
COTX90046-1w	8	8			2	8	8	2	8	8		9	9	9	9	0	0		ok+	late, nice tubers	
COTX90046-2w	8	7			9	8	8	2	8	8		9	9	9	9	0	0		yes	great '99	
COTX90046-5w	8	8			8	7	7	2	8	7		8	7	9	9	3	0		yes	nice tubers	
W95-498-5	5	8			9	8	8	2	4	6		9	9	9	9	1	0		no	small	
W95-500-2	2	2			8	8	8	3	7	6		9	9	9	9	0	0		no	small	
W95-502-1	4	6			8	7	7	2	8	8		9	9	9	9	0	1	8	ok+	nice, low yield	
W95.0672-1	6	7			4	8	8	6	5	6		7	6	5	9	0	1	8	no	defects	
W95.6498-1	5	5			8	8	7	1	8	7		9	9	9	9	0	4	7	no	small	
W95.6498-2	7	8			7	6	5	3	7	5		7	9	9	9	2	10	5	no	heat necrosis	
W95.6498-5	7	7			5	7	6	2	8	8		9	9	9	9	2	6	7	yes	heat necrosis	
W95.6500-3	6	7			3	8	7	2	7	7		8	9	9	9	0	0		ok+	good Spec Gravity	
W95.6527-1	6	6			7	8	7	2	3	6		8	8	9	9	0	0		no	very flat	
W95.6543-2	7	7			7	8	8	2	6	7		9	9	9	9	0	4	6	no	heat necrosis	
W95.6543-3	8	8			7	7	7	5	7	6		9	9	9	9	0	0		no	small	
W95.6545-1	6	5			8	7	7	5	6	6		9	9	9	9	0	0		no	small	
W95.6545-3	8	7			1	8	7	5	7	7		9	9	6	9	0	0		no	heat sprouts	
W95.6550-2	6	5			8	8	8	3	5	5		9	9	9	9	2	0		no	poor appearance	
W95.6553-1	5	6			9	7	6	2	7	7		9	9	9	9	1	2	6	ok	heat necrosis	
W95.6557-3	8	8			7	8	8	5	5	6		9	7	9	9	0	3	7	ok	air cracks	
W95.6558-2	6	6			8	8	7	2	6	3		7	3	9	9	0	1	8	no	growth cracks	
W95.6563-1	5	5			7	7	8	2	6	7		9	9	9	9	0	1	8	no	green tubers	
W95.6645-2	7	8			1	8	7	4	4	6		9	9	9	9	2	5	7	yes	poor appearance	
Atlantic	7	8			6	7	6	2	8	8		9	9	9	9	3	10	6	std		
Superior	6	8			8	7	7	3	6	6		9	9	9	9	0	2	7	std		

New Jersey Table 8. (Continued.)

Variety	PLANT			TUBER CHARACTERS					TUBER DEFECTS(2)										OVER ALL	Comments
	P	A	P	M	S	C	T	S	D	T	S	G	H	S	B	H	N	R		
Red Skinned Seedlings																				
All Blue	8	8		4	1	7	8	7	5		6	7	9	9	0	0			std	purple flesh
B0811-4	2	2		8	2	8	2	8	7		9	9	9	9	-	-			no	small
B0852-7	7	7		3	1	8	3	7	6		9	9	9	9	0	2	8		no	bad rot
B0967-11	6	7		2	1	7	4	5	7		9	8	9	9	0	2	8		yes	big purple
B1102-3	4	4		8	2	7	3	7	6		9	9	9	9	0	0			no	low yield
B1145-2	2	2		8	2	7	2	6	6		9	9	9	9	0	1	8		no	low yield
B1425-9	7	7		8	8	7	2	8	8		9	9	9	9	0	0			no	sl yellow flesh
B1491-5	7	8		7	2	7	2	7	7		9	9	9	9	0	6	6		no	yellow flesh
B1492-12	7	7		8	2	7	2	6	7		6	7	6	9	0	0			yes	small
B1495-6	5	5		5	2	6	3	4	6		9	9	9	9	0	0			no	poor appearance
B1495-15	7	7		2	1	5	3	8	7		9	8	9	9	4	0			yes	nice purple
B1521-2	7	6		7	2	8	2	8	8		9	9	9	9	0	0			yes	nice red
B1523-4	8	8		3	2	7	2	5	7		9	9	9	9	0	0			yes	late red
B1524-2	7	8		8	2	6	2	7	7		8	9	9	9	0	2	7		no	netted red
B1526-1	8	7		8	2	7	2	6	5		9	6	9	8	1	0			no	red yel flesh
B1529-1	8	8		2	1	7	2	6	6		8	4	9	9	0	0			no	red growth cracks
B1752-5	7	8		8	8	8	2	8	8		9	9	9	9	4	4	7		ok	small
B1758-3	6	7		7	2	7	3	7	8		9	8	9	9	0	1	8		yes	nice red
B1758-4	6	8		5	2	8	2	8	7		8	8	9	9	0	0			yes	nice red
B1761-1	4	6		2	1	7	6	6	7		9	9	9	9	0	2	7		ok+	late purple
B1763-4	6	5		5	1	7	3	7	7		9	9	9	9	0	0			yes	purple
B1763-5	3	6		8	2	7	2	8	7		9	9	9	9	0	0			ok	small red
B1809-3	3	3		8	2	8	3	6	6		9	9	9	9	0	0			no	low yield
B1811-1	7	7		9	2	4	2	7	8		9	9	9	9	0	0			no	red rus yel flesh
B1816-5	6	7		8	1	8	3	7	7		9	9	9	9	0	1	8		ok+	small purple
Cherry Red	7	8		8	2	7	3	7	7		9	9	9	9	1	0			ok+	ok red color
Chieftain	7	7		3	2	8	3	4	6		9	9	9	9	0	4	7		no	poor red color
MN 17922	8	8		3	2	8	2	6	7		9	7	9	9	0	0			yes	long red
MN 17989	4	7		4	2	8	3	7	6		9	9	9	9	0	0			no	low yield
MN 17993	6	7		7	2	8	3	7	8		8	9	9	9	0	0			no	low yield

New Jersey Table 8. (Continued.)

Variety	PLANT			TUBER CHARACTERS										TUBER DEFECTS (2)										OVER ALL	Comments
	P	A	P	M	S	C	T	S	D	T	S	G	H	S	B	H	N	R	H	N	R				
- - - -	Red Skinned Seedlings																								
MN 18365	4	4		8	2	7		3	7	7		9	9	9	9		-	-	-	-	-	no	low yield		
MN 18772	6	8		4	2	8		2	8	7		7	5	9	9		0	0			no	growth cracks			
NorDonna	6	8		7	2	7		3	8	8		9	9	9	9		0	0			yes	nice red color			
Super Red																									
Norland	3	4		5	2	8		3	8	7		7	7	9	9		0	4	7		ok+	good red color			
Norland	5	5		8	2	8		3	8	8		9	8	8	9		0	0			std	ok red color			
Dark Red																									
Norland	5	5		8	2	8		3	7	7		9	9	9	9		0	0			std	ok+ red color			
NY T8-3	6	6		6	2	7		2	8	8		9	9	9	9		0	0			no	small red			
NY T10-1	7	8		8	2	7		4	7	7		9	9	9	9		0	0			yes	small			
NY T10-3	6	7		7	2	7		2	7	8		9	9	9	9		0	0			ok+	low yield red			
NY T14-1	5	5		7	2	8		2	7	8		9	9	9	9		0	0			ok+	low yield red			
NY T15-2	5	7		7	2	7		3	7	7		9	9	9	9		0	0			no	low yield			
NY T17-2	7	7		8	2	8		6	7	6		9	9	9	9		0	4	7		yes	red flesh			
Redsen	5	5		5	2	8		2	8	7		9	9	9	9		0	0			ok	nice red color			
NDTX731-1R	8	6		5	2	6		2	8	8		9	7	9	9		0	0			yes	nice red			
Yukon Gold	6	6		8	8	8		2	8	8		9	9	9	9		1	2	8		std				
- - - -	Russetted Skinned Seedlings																								
A81386-1	6	7		9	5	4		8	6	5		9	9	9	9		0	0			-	no	poor appear		
A84095-1	7	8		8	5	3		8	7	7		8	9	9	9		1	0			ok+	nice tubers			
A84118-3	7	8		7	5	4		7	7	7		9	9	9	9		1	0			no	small			
A84180-8	8	7		7	5	3		9	7	7		7	9	9	9		4	0			ok+	hollow heart			
AF1156-14	7	8		6	6	5		8	7	6		3	9	3	9		0	0			no	heat sprouts			
AF1991-2	7	8		6	5	3		8	7	7		9	9	7	9		0	1	8		ok+	defects			
AF2004-3	5	8		6	7	6		7	6	5		7	9	7	9		0	0			ok	poor appearance			
AF2015-14	7	7		7	8	7		8	7	6		8	9	9	9		1	8	8		ok	heat necrosis			
AF2018-4	5	6		8	8	8		8	5	7		9	7	7	9		0	0			no	low yield			
AF2048-3	4	7		8	5	4		3	5	6		9	9	9	9		0	1	8		no	round russet			

New Jersey Table 8. (Continued.)

Variety	PLANT			TUBER CHARACTERS								TUBER DEFECTS(2)								OVER ALL	Comments			
	P	A	a	M	t	s	Skinned			Seedlings		S	G	H	S	B	H	N	R					
							C	I	X	T	S											h	p	a
- - -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
AO82611-7	7	8	6	5	3	8	7	6	-	-	-	-	9	6	9	9	0	0	-	-	-	-	ok+	good yield, small
BB1409-2	7	8	8	5	4	6	5	6	-	-	-	-	7	7	7	9	0	2	8	-	-	-	ok-	poor appearance
BB1890-19	7	7	3	6	7	7	7	5	-	-	-	-	6	9	8	9	5	0	-	-	-	-	no	poor appearance
BB922-11	7	7	6	5	3	7	7	6	-	-	-	-	7	7	7	9	0	1	7	-	-	-	ok	?? appearance
MN 18153	6	7	8	5	4	7	6	7	-	-	-	-	9	7	9	9	0	1	8	-	-	-	yes	nice tubers
MN 18710	7	6	7	5	4	7	5	7	-	-	-	-	9	9	9	9	0	1	8	-	-	-	yes	good yield
MN 18713	6	6	8	5	4	7	6	5	-	-	-	-	8	9	6	9	0	0	-	-	-	-	no	poor appearance
MN 18714	6	7	7	5	4	8	7	5	-	-	-	-	9	6	7	9	0	0	-	-	-	-	ok	heat sprouts
Norkotah 3	6	8	7	5	4	8	7	6	-	-	-	-	8	7	9	9	0	0	-	-	-	-	ok	so-so
Norkotah 3117	4	7	8	5	4	8	6	6	-	-	-	-	9	8	9	9	0	1	8	-	-	-	no	so-so
Norkotah 8	5	7	7	5	3	8	7	7	-	-	-	-	9	9	9	9	0	0	-	-	-	-	ok	nice tubers
Shepody	7	7	7	8	8	8	4	6	-	-	-	-	5	9	3	9	1	1	8	-	-	-	no	heat sprouts
ATX84706-2Ru	8	7	5	7	7	8	7	8	-	-	-	-	9	7	9	9	0	0	-	-	-	-	yes	nice tubers
TXAV657-27Ru	9	8	4	5	4	8	7	7	-	-	-	-	7	8	9	9	0	0	-	-	-	-	yes	small
TXNS 102	8	8	7	5	3	8	7	7	-	-	-	-	9	7	9	9	1	0	-	-	-	-	yes	small
TXNS 112	8	8	7	5	3	8	8	8	-	-	-	-	8	9	9	9	0	0	-	-	-	-	yes	nice tubers
TXNS 223	8	7	5	5	4	8	8	8	-	-	-	-	9	9	9	9	2	1	8	-	-	-	yes	very nice tubers
TXNS 278	8	8	3	5	4	8	8	8	-	-	-	-	9	9	9	9	0	0	-	-	-	-	ok+	nice tubers
TXNS 296	7	8	7	5	4	8	7	8	-	-	-	-	9	7	9	9	0	0	-	-	-	-	ok	nice tubers

(1) See NE-184 rating table for plant and tuber characters and tuber defects ratings.

(2) HH = No. of hollow heart tubers out of 10. HN = No. of heat necrosis tubers out of 10 cut.



**New Jersey Table 9.** Yield, specific gravity, and tuber sizes for 25 round specialty potato varieties, harvested **Late Season** and grown on a silt loam soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ - 1999 (1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% O v e r			% Culls			% Tuber Sizes (3)					% Wire (4)	
					1	7/8	2 1/2	1	2	3	4	5	Worm	HH	HN	R	
B1523-4	cf	725	611	137	1.062	93	61	10	7	32	38	21	2	1	0	0	
B1529-1	cf	555	457	102	1.067	92	56	11	8	36	44	12	0	2	0	6	8
Superior	ne	467	447	100	1.076	98	78	2	2	20	51	27	0	12	0	0	
Chieftain	ne	524	439	98	1.064	96	60	12	4	35	41	17	2	14	0	29	4
B0967-11	cf	504	437	98	1.076	97	73	11	3	24	38	28	7	17	0	7	6
Super Red																	
Norland	cf	476	405	91	1.051	94	64	9	6	29	40	24	1	12	0	3	5
B1524-2	cf	466	385	86	1.066	88	46	5	12	42	32	12	2	15	0	3	7
B1495-15	cf	414	368	82	1.071	93	65	4	7	28	37	25	2	8	0	0	
B1763-4	cf	369	348	78	1.066	96	61	2	4	35	43	17	1	3	0	0	
B0852-7	cf	378	346	77	1.074	95	65	5	5	31	41	21	3	20	0	3	6
Dark Red																	
Norland	ne	388	339	76	1.061	94	54	7	6	40	41	13	0	24	0	0	
Norland	cf	358	331	74	1.061	96	61	4	4	36	48	10	2	31	0	0	
B1521-2	cf	357	321	72	1.070	91	39	2	9	52	31	8	0	16	0	0	
Yukon Gold	ne	333	303	68	1.080	93	40	2	7	53	26	14	0	32	0	2	7
NorDonna	ne	411	292	65	1.062	86	38	17	14	48	31	7	0	8	0	0	
B1492-12	cf	475	278	62	1.065	74	14	21	26	61	13	1	0	9	0	0	
Redsen	cf	311	273	61	1.070	93	39	5	7	53	33	6	0	16	0	0	
Cherry Red	cf	291	273	61	1.080	95	46	1	5	49	42	4	0	37	0	0	
All Blue	cf	574	270	60	1.065	58	3	19	42	55	3	0	0	0	0	0	
B1763-5	cf	318	267	60	1.069	87	36	5	13	52	31	4	0	42	0	0	
B1761-1	cf	280	252	56	1.065	94	34	4	6	60	31	2	0	9	-	-	
CV (5)		18	21														
W-D Bayes LSD.05		95	90		.004	10	13	6	10	14	11	10	3	25			

- (1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 9", planted on 4/29, and harvested on 9/27.
- (2) cf = USDA Chapman Farm and ne = Northeast Regional Project.
- (3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.
- (4) HH = No. hollow heart tubers out of 40 cut. HN = No. of heat necrosis tubers out of 40 cut. R = Heat necrosis rating. See NE-184 rating table
- (5) CV=Coef of Variation; W-D Bayes LSD (.05 ) = Waller Duncan test for least significant difference.

**New Jersey Table 10.** Yield, specific gravity, and tuber sizes for 12 russet potato varieties, harvested **Late Season** and grown on a sandy loam soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ - 1999(1).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% O v e r		% Culls	% Tuber Sizes (3)					% Wire		(4) HH HN R		
					4 oz	8 oz		1	2	3	4	5	Worm	HN			
B1409-2	cf	548	500	120	1.078	95	74	7	5	22	29	33	11	28	0	2	7
B9922-11	cf	501	424	102	1.081	94	78	11	6	16	32	17	29	21	3	1	6
Superior	ne	475	416	100	1.072	89	39	2	11	50	28	9	2	23	1	0	
Norkotah 3	ne	560	412	99	1.069	91	60	19	9	31	31	13	16	9	5	1	7
A082611-7	ne	703	409	98	1.076	73	28	21	27	45	22	5	2	13	0	0	
Norkotah 8	ne	506	395	95	1.070	91	57	14	9	34	27	17	12	11	3	0	
A81386-1	ne	472	374	90	1.069	89	50	11	11	39	26	13	12	21	0	3	7
A84118-3	ne	435	338	81	1.074	84	41	8	16	43	33	6	1	14	0	0	
A8495-1	ne	453	326	78	1.082	85	52	15	15	34	28	15	9	26	1	4	6
A84180-8	ne	497	306	74	1.070	82	47	25	18	35	26	14	7	11	1	0	
Norkotah3117	ne	317	255	61	1.071	84	29	4	16	55	24	3	2	14	0	1	8
Shepody	ne	578	207	50	1.068	85	51	57	15	34	26	17	8	4	3	4	6
CV (5)		20	29														
W-D Bayes LSD.05		167	186		.003	7	13	7	7	9	ns	16	5	16			

(1) Plots were 21' long and 3' wide with 4 reps. Commercial cultural practices were used which included irrigation. Seedpieces were spaced at 12", planted on 4/29, and harvested on 9/27.

(2) cf = USDA Chapman Farm and ne = Northeast Regional Project.

(3) Size 1 = Under 4 oz, S2 = 4 to 8 oz, S3 = 8 to 12 oz, S4 = 12 to 16 oz, and S5 = Over 16 oz.

(4) HH = No. hollow heart tubers out of 40 cut. HN = No. of heat necrosis tubers out of 40 cut. R = Heat necrosis rating. See NE-184 rating table.

(5) CV=Coef of variation; W-D Bayes LSD (.05) = Waller Duncan test for least significant difference.

**New Jersey Table 11.** Yield, specific gravity, and tuber sizes for 17 round potato varieties, harvested **Late Season** and grown on a silt loam soil at the Snyder Agricultural Research & Extension Farm near Pittstown, NJ - 1999 (1).

Variety Name	Seed Source (2)	Total Market Yield cwt/a	% of Sup.	Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					% Wire Worm			(5) HH HN R	
					1	7/8	2 1/2		1	2	3	4	5	Worm	HH HN R			
NY T43-27	ny	583	541	130	1.074	93	82	5	3	11	18	34	30	13	0	1	7	
NY T45-7	ny	611	539	130	1.070	88	78	10	2	10	33	40	6	6	0	0		
NY T4-2	ny	582	511	123	1.078	88	67	7	5	21	35	32	0	41	0	0		
COTX90046-5w	tx	612	506	122	1.080	83	69	16	2	13	36	28	5	4	0	3	6	
NY T27-21	ny	559	503	121	1.072	90	67	8	3	22	41	27	0	33	0	0		
ATX85404-8w	tx	648	476	114	1.066	73	47	20	7	26	27	20	0	14	0	0		
NY T37-3	ny	514	469	113	1.082	91	43	3	5	48	30	12	0	14	0	0		
NY T44-8	ny	467	464	112	1.082	99	92	0	0	7	45	38	9	32	0	0		
COTX90046-1w	tx	543	463	111	1.067	85	67	11	4	18	29	22	16	37	0	0		
NY R17-7	ny	499	451	108	1.072	90	59	5	5	32	47	12	0	6	0	0		
NY T35-34	ny	482	442	106	1.080	92	55	4	4	36	34	20	2	23	0	0		
NY T3- 9	ny	480	441	106	1.078	92	73	5	3	19	48	24	0	52	0	0		
B1066-73	cf	485	420	101	1.073	87	69	8	5	17	37	32	0	37	0	0		
NY T35-5	ny	513	417	100	1.082	81	76	17	2	5	18	31	27	5	0	0		
NY 101	ny	475	406	98	1.064	85	57	10	4	29	35	21	0	5	0	1	4	
NY T2-2	ny	441	402	97	1.074	91	79	5	4	12	36	35	9	17	0	0		
NY T3-11	ny	453	402	97	1.076	89	66	9	2	23	50	14	2	41	0	0		
NY T38-9	ny	421	396	95	1.085	94	69	4	2	25	32	36	0	67	0	5	5	
NY R17-106	ny	476	389	93	1.073	82	55	13	5	26	43	10	2	8	0	0		
NY T3-5	ny	407	382	92	1.085	94	86	5	1	8	17	44	26	49	0	1	8	
NY T27-13	ny	428	379	91	1.075	89	40	2	10	48	28	12	0	30	0	5	5	
NY T20-15	ny	403	378	91	1.073	94	75	3	4	18	52	24	0	56	0	1	6	
NY T35-19	ny	438	367	88	1.083	84	24	3	13	60	21	3	0	8	0	0		
NY 123	ny	387	353	85	1.090	91	58	4	4	33	47	11	0	13	0	1	6	
B1497-33	cf	509	353	85	1.069	69	38	19	12	32	26	10	2	9	0	0		

New Jersey Table 11. (Continued).

Variety Name	Seed Source (2)	Total Market Yield Yield cwt/a	cwt/a	Sup.	% of Spec. Grav.	% O v e r			% Culls	% Tuber Sizes (3)					% Wire		(5) HH HN R		
						1	7/8	2 1/2		1	2	3	4	5	Worm				
NY T35-39	ny	380	349	84	1.090	92	54	3	5	38	43	9	2	19	0	0			
NY S14-2	ny	357	348	84	1.082	97	70	0	3	27	43	25	2	22	0	0			
AF1950-1	me	612	343	82	1.079	56	37	40	4	19	22	14	0	8	0	0			
AF1938-3	me	420	341	82	1.074	81	57	17	2	24	42	15	0	18	0	2 6			
NY T36-33	ny	341	319	77	1.071	94	67	4	3	27	48	15	3	47	0	0			
NY T28-1	ny	349	306	74	1.069	88	52	10	2	36	38	13	0	100	0	0			
NY T4-7	ny	331	304	73	1.085	92	55	5	4	37	43	12	0	66	0	0			
NY T35-30	ny	297	288	69	1.087	97	65	0	2	33	45	20	0	38	0	0			
B1450-10	cf	470	284	68	60	9	9	10	29	51	9	0	0	0	0	0			
NY 115	ny	310	277	66	1.081	89	57	9	2	32	41	16	0	11	0	0			
AF1896-2	me	314	257	62	1.078	82	34	10	9	48	34	0	0	10	0	6 6			
NY T36-13	ny	269	257	62	1.076	95	52	3	2	43	43	10	0	32	0	0			
AF1949-1	me	413	238	57	1.070	58	28	37	6	30	26	2	0	14	0	0			
B1497-22	cf	239	113	27	1.059	47	24	43	10	23	24	0	0	3	0	0			
- - -	- - -	Red Skinned Seedlings															- - -	- - -	- - -
NY T10-3	ny	604	563	135	1.059	93	64	3	4	29	49	15	0	33	0	0			
MN17989	mn	588	524	126	1.064	89	80	9	2	10	30	37	12	51	0	1 7			
NDTX731-1R	tx	553	520	125	1.053	94	78	4	3	16	42	36	0	14	0	0			
B1758-3	cf	550	484	116	1.068	88	39	5	7	49	33	6	0	24	0	0			
MN17922	mn	544	464	112	1.054	85	61	10	4	24	31	29	1	20	0	0			
NY T10-1	ny	558	441	106	1.055	79	27	5	16	52	24	3	0	25	0	0			
B1752-5	cf	481	438	105	1.073	91	53	1	8	39	38	15	0	66	0	3 5			
B1758-4	cf	449	375	90	1.071	84	41	9	8	43	27	12	2	19	0	1 6			
NY T14-1	ny	380	353	85	1.072	93	52	0	7	41	46	6	0	35	0	0			
NY T8-3	ny	404	353	85	1.055	88	42	4	9	46	36	6	0	24	0	0			
B1816-5	cf	378	353	85	1.074	93	25	0	6	68	25	0	0	14	0	0			
NY T17-2	ny	510	344	83	1.074	67	4	8	25	64	3	1	0	23	0	0			
MN17993	mn	382	340	82	1.073	89	46	2	9	43	34	13	0	45	0	0			
MN18772	mn	525	339	82	1.051	65	40	30	5	24	33	8	0	23	0	0			
MN18365	mn	335	302	73	1.070	90	21	0	10	69	18	3	0	61	0	0			

New Jersey Table 11. (Continued).

Variety Name	Seed Source (2)	Total Yield cwt/a	Market Yield % of Sup.	Spec. Grav.	% Over		% Culls	% Tuber Sizes (4)					% Wire		(5) HH HN R
					4 oz	8 oz		1	2	3	4	5	Worm	HN	
Red Skinned Seedlings															
NY T15-2	ny	304	257	62	1.081	84	58	10	6	27	42	16	0	52	0 0
B1809-3	cf	299	240	58	1.000	80	1	0	19	79	1	0	0	34	0 0
B1811-1	cf	373	164	39	1.071	44	3	7	49	41	3	0	0	11	0 0
B1102-3	cf	210	163	39	1.077	78	5	1	21	73	5	0	0	29	0 0
Russetted Skinned Seedlings															
ATX84706-2Ru	tx	505	416	100	1.073	82	74	13	4	8	21	21	33	22	1 0
TXNS 223	tx	436	349	84	1.067	80	51	10	10	29	23	15	13	2	0 0
TXAV657-27Ru	tx	530	332	80	1.071	63	33	24	14	29	22	5	6	9	0 6 6
MN18710	mn	493	317	76	1.070	64	19	10	25	45	14	4	0	6	0 1 4
AF2004-3	me	333	290	70	1.072	87	23	0	13	64	21	1	0	31	0 0
MN18714	mn	400	288	69	1.075	72	37	12	16	35	25	10	2	17	0 1 7
TXNS 112	tx	399	286	69	1.068	72	35	16	12	37	27	3	5	18	0 0
TXNS 278	tx	409	271	65	1.070	66	34	21	13	32	18	9	7	5	0 0
MN18153	mn	318	258	62	1.075	81	41	4	15	40	28	13	0	27	0 0
TXNS 102	tx	385	257	62	1.068	67	16	10	23	51	10	5	0	3	0 0
TXNS 296	tx	379	257	62	1.068	68	30	11	21	38	20	5	4	5	0 0
AF1156-14	me	250	205	49	1.076	82	52	7	11	30	24	19	9	49	0 1 7
AF2018-4	me	223	189	46	1.076	85	59	8	7	26	36	16	7	57	0 0
B1890-19	cf	287	185	44	1.068	64	30	11	24	34	30	0	0	34	0 0
AF1991-2	me	313	171	41	1.069	55	25	25	21	29	24	1	0	31	0 0
MN18713	mn	340	145	35	1.075	42	7	10	48	36	7	0	0	19	0 1 7
AF2048-3	me	144	82	20	1.067	57	5	10	33	52	5	0	0	17	0 0

(1) Plots were 21' long and 3' wide with 1 rep. Seedpieces were spaced at 9" for the round varieties and 12" for the long varieties. They were planted on 4/29, and harvested on 9/27.

(2) cf = USDA Chapman Farm, me = Univ. of Maine, mn = Univ. of Minnesota, ne = NE Regional Proj., ny = Cornell Univ. and tx = Texas A&M.

(3) Size 1= Under 1 7/8, S2= 1 7/8 TO 2 1/2, S3= 2 1/2 to 3 1/4, S4= 3 1/4 TO 4, and S5= Over 4.

(4) Size 1= Under 4 oz., S2= 4 TO 8 oz., S3= 8 to 12 oz., S4= 12 to 16 oz. S5= Over 16 oz.

(5) HH = No. hollow heart tubers out of 10 cut. HN = No. of heat necrosis tubers out of 10 cut. R = Heat necrosis rating. See NE-184 rating table.



## New York

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### Early Selections

The crossing program produced 204 round white combinations with chipping and tablestock potential, and 5 red combinations. Eighty seven combinations segregate for resistance to late blight, 57 segregate for resistance to two or more races of *Globodera rostochiensis*, 124 are trichome hybrids, and 98 segregate for extreme resistance to PVY.

Seeds produced in 1997 (Y's) were sown and the seedlings were transplanted to six-inch pots. Four tubers were saved from each pot, after selecting for tuber color in the red progenies. There were 10831 round whites, 6138 with trichomes, 2964 with blight resistance, and 2572 red clones.

The four hill seedling populations (W's) started with 7498 round whites. At harvest 556 were selected for tuber type, then stored until testing for resistance to the golden nematode. There were 304 of these that also segregated for the Ro2 race of golden nematode. The 1197 reds produced 162 selections.

The 3850 trichome clones were selected for tuber type at harvest, then resistance to the golden nematode. There were 466 saved. The 1603 neotbr clones bred for resistance to late blight produced 170 selections.

The third year selections (V's) consisted of 971 clones in 24 hill plots. At harvest 283 were saved and the following winter evaluations were made for chip color, specific gravity, and golden nematode resistance.

### Intermediate Selections

The fourth year selections (U's) were grown as 100 hill plots for seed production and selection and in two row by 20-foot plots for observation and chip samples. From the 64 that were grown, 24 have survived the fall selection and post harvest tests.

The fifth year selections (T's) were grown in 400 hill seed plots and a replicated yield trial. The 68 at this stage of selection were reduced to 24. Five are round red clones, 5 are trichome clones, and 14 are round whites with Ro1 and Ro2 resistance.

The sixth year selections (S's) have been reduced from 9 to 5.

### Advanced Selections

A summary of the performance of the most advanced clones is as follows:

**Keuka Gold = NY101 = K7-1 = Steuben x Norwis** (1986). Mid-late season tablestock. Pale yellow flesh. Scurfy skin. Exceptionally high yields of large round tubers. Yield at Harford and Ellis Hollow for nine seasons has been 115% of Atlantic. At four sites in 1995, NY101 yielded 114% of Atlantic and at two sites was 151% of Katahdin. At four sites in 1996, the yield was 124% of Atlantic. At six sites in 1997, the yield was 123% of Atlantic. At three sites in 1998, the yield was

129% of Atlantic. In four trials in Tompkins County in 1999, the yield was 132% of Atlantic. The average for 21 trials (5 years) was 124% Atlantic. Early sizing. Large tuber size. Very round. Very few pickouts. Prominent lenticels were noted in Ithaca trials in 1998 and 1999. Internal necrosis has been observed frequently in Long Island trials and at Harford. Except for these locations, in ten trials (3 years) in New York State, Keuka Gold had 4% hollow heart compared to 10% for Atlantic and 6% internal necrosis, the same as Atlantic. The frequency for both seems to be greatest in largest tubers. Scab resistance like Superior. Specific gravity like Katahdin. Very nice vine growth and appearance. Resistant to golden nematode. Appears to be less susceptible to late blight than Katahdin and Atlantic. This clone is exceptional for its high yield of spherical tubers. It has good eating quality. The scurfy skin and occasionally prominent lenticels in freshly harvested tubers may be a distraction. Keuka Gold should not be planted on sites where internal necrosis is a recurring problem.

**Eva = NY103 = K88-24 = Steuben x (Neotbr x tbr)** (1986). Midseason tablestock and chipstock. Yield of US #1 relative to Atlantic was 91% at five upstate sites in 1993 and was 118% at seven upstate sites in 1994, 114% at six sites in 1995, 110% at six sites in 1996, 96% at six sites in 1997, 105% at five sites in 1998 and 101% at six sites in 1999. The average of 41 tests is 105%. In six years at Riverhead, NY103 yielded 107% of Katahdin. Some evidence that spacing narrower than 9.3" might be an advantage. In 1997, 1998, and 1999, in spacing trials at Ithaca, the 6" spacing yielded an average of 37 cwt/A more than the 9.3" spacing. At Freeville in 1998, the 9" spacing had a 49 cwt advantage over the 6" spacing. On Long Island in 1998, an 8.2" spacing had a 58 cwt advantage over a 10.5" spacing. In 1999, the best yield at Riverhead was at 6" spacing with 160 lb nitrogen/A. Two years of trials at Ithaca and Freeville have shown an advantage of about 50 cwt/A in cutting seed a month before planting and keeping it warm enough to suberize rather than holding seed in cold storage and cutting directly before planting. This may be a consequence of the long tuber dormancy of this clone. Time to sprout has been seven weeks longer than Katahdin and Monona. All our trial data is based on pre-cut seed. Outstanding tuber appearance. Very bright, blemish-free skin. Round to oval shape. Shallow eyes. Medium to large sized tubers. Almost free of pickouts and internal defects. Scab resistance like Monona. Nice vine type. Specific gravity is .014 less than Atlantic (45 trials, 7 years). In 1994, after 45° storage the Agron for chips of NY103 was 54 compared with 55 for Monona. And in 1995, the Agron for NY103 and Snowden were both 60. In 1996, the Agron score for NY103 was 49, Monona was 40, and Snowden was 53. In 1997, the chip score for NY103 was 3.5 compared to 1.8 for Monona and 1.2 for Snowden. In 1998, the Agron for NY103 was 50, for Monona was 49 and for Snowden was 51. The chip scores from the 1998 crop stored in Steuben and Wyoming were 3.4 for NY103 and 2.8 for Snowden. Some after-cooking darkening. Resistant to the golden nematode, PVX, and PVY. The uniform shape, shallow eyes, and bright, blemish-free skin make this a very attractive potato. The exceptionally long tuber dormancy and disease resistance adds further to its merit.

**NY112 (P7-19) = Atlantic x Q155-3** (1990). Late maturity chipstock. Very scurfy skin texture, but attractive round shape. Outstanding yield. In five upstate trials in 1996, the marketable yield was 128% of Atlantic.



In six upstate trials in 1997, the marketable yield was 117% of Atlantic. In five upstate trials in 1998 the marketable yield was 117% of Atlantic. In six upstate trials in 1999, the marketable yield was 117% of Atlantic. In seven states in the SFA trials in 1998, NY112 yielded 117% of Atlantic and 130% of Snowden. In eight county trials in PA in 1998, NY112 yielded 134% of Atlantic. The average for the past four years in New York (22 trials) has been 119% of Atlantic. In 1998 and 1999, the yield was 119% of Katahdin at Riverhead. In four years, the early season yield was 101% of Superior. Large tuber size. Generally free of pickouts due to external defects. There has been a small percentage of internal defects, primarily hollow heart, but less than in Atlantic. The chip color score from 45° storage at Ithaca in 1997 was 2.5 (6 trials) compared to 3.3 for Monona and 1.5 for Snowden. The scores from Wyoming and Steuben County stored samples were 3.6 for NY112 and 2.6 for Snowden in 1997. In 1998 the scores were 3.9 for NY112 and 2.8 for Atlantic. In 2 years of black spot bruise trials at Michigan, NY112 was as susceptible as Atlantic. The average Agron scores for two locations and three dates in 1996, 1997 and 1998 in NY were 52 for NY112, 50 for Monona, and 52 for Snowden. In PA in 1998, the average score at ten locations at 45° storage was 2.4 for NY112 and 2.2 for Snowden. Specific gravity is .008 less than Atlantic (38 trials), .012 greater than Monona. Large vines. White flowers. Golden nematode resistant. Scab resistance like Superior. The outstanding yield, scab resistance, and respectable chip color and specific gravity make this a promising prospect for a chipping variety.

**NY115 (P23-31) = Pike x NY88 (1990).** Medium maturity chipstock and tablestock. This clone is outstanding for its appearance and chip color. The tubers have a smooth bright white skin and well formed shape. A major unresolved consideration is its yielding ability. In three to five trials in Tompkins county each year, NY115 yielded 96% of Atlantic in 1999, 83% in 1998, and 82% in 1997. In Steuben and Wyoming counties, NY115 yielded 76% of Atlantic in 1999, 92% in 1998, and 92% in 1997. At Riverhead in 1999, NY115 yielded 108% of Katahdin in two trials. In the 1998 Snack Food Association trials in 7 states, NY115 yielded 97% of Atlantic. In 5 trials in PA in 1998, the yield was 86% of Atlantic. Usually, the tuber set is below trial average and the tuber size is above trial average. In spacing trials in Ithaca in 1998, the marketable yield at 6" spacing was increased by 11% over 9.3" spacing. In 1999, the increase was 6%. At Freeville in 1998 and 1999, there was almost no effect on yield, but there was a shift in size distribution. At Riverhead in 1999, the 6" spacing yielded 4% more than the 9" spacing. Yellow plants have been observed at emergence, particularly in cold, wet springs. In 1999, the same characteristic was observed on Long Island, Freeville, and Ellis Hollow in plots which had received no herbicide. At Freeville, the yield was not affected by type of herbicide. NY115 sizes early. Marketable yield the end of July at Ithaca is 101% of Superior (4 years). It is generally free of pickouts and internal defects. The chip color is very good from the field and 45° storage. In three years, tubers from Ithaca and Harford, chipped December, January, and February after 45° storage, NY115 chips scored 1.9 compared to 2.2 for Snowden and 4.3 for Monona. The average Agron scores were 55 for NY115, 52 for Snowden, and 49 for Monona. The specific gravity is .010 less than Atlantic (26 trials, 4 years). The reaction to scab in most years has been like Atlantic. At Ithaca in 1999, it appeared to be more susceptible than Atlantic. Resistant

to the golden nematode. White flowers. Good boiling properties. Good vine type. May be resistant to black spot bruise (MI trial).

**NY118 (P49-19R) = D191-103 x Chieftain (1990).** Late season, light red tablestock. Marketable yields at Ellis Hollow and Harford in 1996 and 1997 were 91% of Chieftain. At Freeville in 1997, the yield was 101% of Chieftain. In 1998, the yield was 96% of Chieftain at Ellis Hollow, 97% at Harford, and 94% at Riverhead. In 1999, the yield was 62% of Chieftain at Ellis Hollow, 99% of Atlantic at Harford, 90% of Chieftain at Freeville, 104% of Katahdin at Orleans, and 112% of Chieftain at Riverhead. Tuber set and size of NY118 and Chieftain are similar. Few misshapen tubers and free of internal defects. Attractive, oval shape. Skin is slightly textured and resists skinning. Eyes are sparse and very shallow. The intensity of color is similar to that of Chieftain. Flesh color is bright white before and after boiling. Specific gravity is .004 less than Chieftain (5 trials). Tuber dormancy is three weeks longer than Chieftain. Better scab resistance than Chieftain. Resistant to race Ro1 of the golden nematode. The pale red color of this clone will likely prevent its general acceptance as a red variety.

**NY120 (Q8-2) = Kanona x AF186-2 (1991).** Mid-late season chipstock. Marketable yields at Ellis Hollow and Harford in 1996 and 1997 were 104% of Atlantic. In three other NY trials in 1997, the yield was 123% of Atlantic. In 1998 NY120 yielded 102% of Atlantic in 3 Tompkins County trials and 111% of Atlantic in Steuben and Wyoming Counties. In 1999, marketable yields were 99% of Atlantic in 4 Tompkins County trials, and 96% of Atlantic in Steuben and Wyoming counties. In 18 trials (4 years) the average has been 105% of Atlantic. In the Ellis Hollow spacing trial in 1998, NY120 was especially responsive to closer spacing. At 6" it yielded 16% more than at 9". In a similar trial in 1999, the 6" spacing yielded only 2% more than the 9" spacing. At Freeville in 1999, the 6" and 9" spacing yields were essentially the same, though the tuber number and size were affected. Early harvest yield in 1997 and 1998 was 101% of Superior but only 76% in 1999. Generally few pickouts and free of internal necrosis and hollow heart. Very nice vine type. Tubers have a very scurfy skin texture. Specific gravity is .003 less than Atlantic (19 trials). The chip score after 45° storage (2 locations and 3 chip dates) in 1997 and 1998 was 3.1 for NY120, 3.8 for Monona, and 1.8 for Snowden. The Agron scores were 51.4 for NY120, 51.0 for Monona, and 52.1 for Snowden. Average chip scores from Wise of the Steuben and Wyoming crops in 1997 and 1998 were 4.0 for NY120, 2.9 for Pike and 2.7 for Snowden. Tuber dormancy has been two weeks shorter than Atlantic. Scab resistance is between Superior and Monona. Resistant to race Ro1 of the golden nematode.

**NY121 (Q237-25) = N43-288 x E74-7 (1991).** Mid-late season tablestock. Bright white skin. This clone has resistance to late blight, and to four races of the cyst nematode (Ro1, Ro2, P4A, and P5A). It appears to be resistant to PVY and scab. In a single trial in Ellis Hollow in 1997 it produced a marketable yield 87% of Atlantic. In two trials in Tompkins County in 1998 it yielded 70% of Atlantic. At Riverhead it yielded 65% of Katahdin. In 1999, it yielded 97% of Atlantic in 3 Tompkins County trials and 88% of Katahdin at Riverhead. In 1999, the yield on August 1 was 106% of Superior. Tuber size is small. It had almost no internal or external defects. The specific gravity is .006 less than

Atlantic (3 trials). NY121 will not chip well. Scab reaction is like Monona. In Dr. Fry's 1999 Freeville late blight trial, NY121 had a score of 239 compared to 737 for Elba, 814 for Kennebec, and 1188 for Atlantic. The smaller number is more resistant. This is exceptional resistance in a clone with this maturity. The apical eye and the stolon attachment are moderately recessed, but the overall shape and bright skin make this an attractive potato. It is the best clone we have that is resistant to both races of the golden nematode. The additional resistance to late blight, scab, and virus is a rare combination. We need to more accurately measure its yielding ability and the practical value of this blight resistance in terms of reduced sprays. Growers impacted by Ro2 should be particularly interested.

**NY123 (R127-19) = M504-2 x L227-243 (1992).**

Medium-late maturity tablestock. Bright white skin. This clone combines good insect resistance with attractive tuber shape and good agronomic performance. In a single trial in Ellis Hollow in 1997, it produced a marketable yield 99% of Atlantic. In three Tompkins County Trials in 1999, NY123 produced a marketable yield 94% of Atlantic and 88% of Katahdin at Riverhead. There are few pickouts except at Freeville in 1999 and no internal defects. The specific gravity is .003 less than Atlantic (5 trials). It will not chip. At Freeville in 1997, in plots protected by insecticide, NY123 yielded 95% of Allegany. In adjacent plots without protection from insecticides NY123 suffered only 14% yield reduction whereas Allegany suffered 70% yield reduction. In 1998 in a replicated trial at Freeville when protected with insecticide it yielded 92% of Atlantic. In adjacent plots not protected by insecticide, NY123 suffered only 5% yield reduction whereas Atlantic suffered a 25% reduction. In similar trials in 1999, NY123 yielded 91% of Allegany and 77% of Atlantic in protected plots. In the adjacent unprotected plots, NY123 suffered a 15% yield reduction while Allegany yield was reduced by 48% and Atlantic by 32%. Based on data from three years, NY123 shows only 11% yield reduction due to Colorado potato beetles in unprotected plots and no visible leaf hopper damage. This clone is resistant to race Ro1 of the golden nematode and probably to PVY. Scab reaction is between Atlantic and Katahdin. This clone is superior to L235-4 (Prince Hairy) in tuber appearance and PVY reaction; is similar in yield and insect resistance and is earlier in maturity.



## Long Island, New York

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**Introduction:** Experiments conducted in 1999 are part of an ongoing program evaluating promising potato clones under Long Island conditions. Forty potato clones were evaluated in replicated experiments conducted at the Long Island Horticultural Research and Extension Center (LIHREC). In addition, 77 clones were included in an observation trial.

**Methods:** The randomized complete block design with four replications was used in all clonal experiments. Variety plot size was 2 rows by 12 feet. Fertilizer was applied at a rate of 1,000 lbs/A of 10-20-20 in bands at time of planting. An additional 60 lbs N/A were applied when plants were 4 to 6 inches tall. Seed spacing was 9.3 inches. Specific gravity was determined by the hydrometer method. Internal defects were determined on ten 3.25 to 4 inch tubers per replication.

**Early White-skinned Varieties:** Eramosa produced lower yields than Superior and Andover on 8/17/99 when final yield data were taken. This variety, however, compared favorably to Superior from 6/21/99 through 7/26/99 when two plants of each variety were harvested on a weekly basis. Eramosa tubers were flattened and had relatively shallow eyes. The specific gravity of Andover and Eramosa tubers was higher than Superior.

**NE184 White-skinned Clones:** The highest total yields were produced by NY112, AF1437-1 and AF1615-1. The highest marketable yields of 2 to 4" tubers were produced by NY112, AF1615-1 and NY115. Specific gravity was generally low this year. Atlantic tubers had the highest specific gravity, averaging only 1.070. Norwis and AF1437-1 tubers had the lowest. Tuber appearance of Yukon Gold, AF1615-1, NY103, NY115 and B1429A-3 was acceptable. Kennebec, Norwis and AF1437-1 had poor appearance ratings. Katahdin tubers had a large amount of hollow heart and brown center. Internal necrosis was a problem in Atlantic, Norwis and NY112.

### **Cornell White-skinned Clones:**

Exceptionally high total and marketable 2-4" yields were produced by R17-7. The total yields of R17-106 and S28-2 were also high. The marketable yield of the latter clones was not significantly different from the others tested, except for Norwis, NY123, S33-5 and S300-7, which had lower yields. The low 2-4" yield of Norwis is deceiving because this entry had 26% of its total yield in the >4" size. Tubers of NY123 had the highest specific gravity. Internal defects were substantial in Norwis, S32-3 and S33-5. Slight internal necrosis amounted to 15% of NY103 and 13% of NY115 tubers cut.

**Russet-skinned Clones:** Three clones of Russet Norkotah were compared to AO82611-7. The latter clone produced the highest total yield in the experiment. However, 42% of the total yield had defects. Most tubers were misshapen. The standard Russet Norkotah produced the lowest total yield but the highest marketable yield of 4 to 16 oz tubers. Russet Norkotah 3 tubers were small and many were misshapen. There was no difference in the tuber specific gravity between the Russet Norkotah clones. AO82611-1 tubers had the highest specific gravity.

### **Red and Purple-skinned Potato Clones:**

The highest total and marketable yields were produced by B1523-4. Unfortunately, many of the tubers had thick sprouts and attached stolons. Chieftain and NY118 produced significantly higher yields than the remaining clones. The external appearance of S49-3 and T17-2 was very good. S49-3 tubers have a smooth purple skin and a mottled purple flesh. T17-2 tubers have a smooth medium to dark red skin and a mottled pink flesh. Internal and external defects were severe in Super Red Norland and Chieftain.

**Observation Trial:** Data from a non-replication trial on yield, appearance, specific gravity and internal defects of early selection clones, specialty varieties and recently released varieties are presented in Tables 12 & 13.

**N Rate and Spacing Effect on NY103 and NY115:** Experiments to determine the effect of nitrogen rate and spacing on yield and quality of NY103 and NY115 were established on 4/15/99. The experimental design was a split plot with four replications. The main plot was N rate and was 4 rows x 30 feet and the sub plots were spacing and were 4 rows x 15 feet long with the center 2 rows x 12 feet used for data. All plots were fertilized at a rate of 200 lbs/A of phosphate and potash plus either 100, 140 or 190 lbs N/A in bands of planting. Sixty pounds N/A were sidedressed on 6/4/99.

The total and marketable yields of both clones was not significantly affected by fertilizer or spacing treatments. The highest numeral yields for both clones was at the 6 inches and 160 lb N/A combination. Specific gravity also was not impacted by treatment. Some defoliation occurred late in the season when Colorado potato beetle adults migrated from a neighboring field after it was vine killed. The defoliation may have had an impact on treatment effects.

**The Effect of Standard Herbicides on Phytotoxicity, Yield and Quality of NY115:** An experiment to evaluate pre- and post-emergence applications of standard potato herbicides on early season phytotoxicity, yield and appearance of NY115 was initiated on 4/27/99. Seed was planted on 4/13/99. The treatments consisted of singular pre-emergence applications of Sencor, Lorox, Dual and Matrix; combinations of Dual with Sencor or Lorox applied pre-emergence; pre- and post-emergence applications of Sencor; post-emergence applications of Matrix; and a hand-weeded control.

Phytotoxicity ratings showed that the yellow foliage we had observed in the past and ascribed to herbicide injury was randomly distributed in the plots, including the unsprayed hand-weeded control. Yield was lowest in the Matrix treatments regardless of time of application. The lower yield in these treatments is likely due to the lack of weed control and not to herbicide injury. Matrix was used alone-not in combination with a surfactant. The use of a surfactant with Matrix is very important to

achieve good weed control. The results show that herbicide injury is not the cause of early season yellowing of NY115 plants.

**The Effect Of 2,4-D Application On Yield Quality And Skin Color Of Chieftain And NY118:** The effect of low rate foliar applications of 2,4-D on Chieftain and NY118 was evaluated in separate experiments. The plot size was 2-34" rows x 20' with the center 10' of both rows of the Chieftain experiment and one row of the NY118 experiment were used for yield and quality determinations. The experimental design was a randomized complete block with four replications. The low volatile ester formulation of 2,4-D treatments were: one application of 1.0 oz/A on 6/12/99; one application of 2.3 oz/A on 6/12/99, and two applications of 2.3 oz on 6/12/99 and 6/29/99. The above treatments were compared to an unsprayed control.

While there was some leaf distortion due to 2,4-D applications in both clones, the amount of distortion was relatively small. The total and marketable yields of Chieftain and NY118 were not affected by 2,4-D treatment. The skin color of Chieftain tubers was intensified by 2,4-D application. The skin color of tubers in the no spray treatment were light red to pink. The 1.0 oz/A treatment resulted in light to medium red skin. The single application of 2.3 oz/A resulted in light red to dark red ratings while the two applications of 2.3 oz/A resulted in dark red to medium red skin. Skin color of NY118 tubers was not materially affected by 2,4-D application. Tubers of both varieties tended to skin regardless of treatment.

**Acknowledgments:** Seed was provided by R.L. Plaisted, Cornell University; K.G. Haynes, USDA; G.A. Porter, University of Maine; Childstock Farm, Malone, N.Y. The assistance of Bennett Orlowski, Rod Zeltmann, Mark Sisson, Sandra Mulvaney and Carole Brush is greatly appreciated.



Long Island Table 1. Tuber characteristics of potato clones grown on Long Island, N.Y.-1999

CLONE	Table	Color	Texture	Shape	Depth	Eye Depth		Appearance	Comments
						Lateral	Apical		
Andover	2,3	Bu	SN	O	MT	S-MS	MS-MD	7	Att, Irr, Sl Skinning
Atlantic	4,5	Bu-T	N	R-O	MT	MD	D	6	Irr, DSE, (rot)
Chieftain	8,9	Pi	S	O-R	MT	MS	MS	5	Irr, Sk, Sp, Ct
Eramosa	2,3	Bu	SN	O	SF-F	MS	S-MS	7	Attractive, Some Sp
Katahdin	4,5,6,7	W	RS	O-R	SF-F	MS	MD	6	Irr, St, (PE, Rot, L)
Kennebec	4,5	W	S	O	F	MS	MD	4	Irr, Kn, (JER, PE)
Norwis	4,5	W	S	O	F	MD	D-VD	4	Irr
Reba	6,7	W	RS	O	MT	MS	MD-D	7	Irr
Redsen	8,9	DR	S	R-O	MT	S	S	7	Sl Irr
Rus Norkotah	10,11	T	MR	L	MT	MS	S	7	Irr, (PE, Rot, Sc)
Rus Norkotah 3	10,11	B	MR	L	MT	S	S	6	Sl Irr, Kn, Sl Pointed(PE, Sc)
Rus Norkotah 8	10,11	B	MR	L	MT	S	S	7	Irr, Kn (PE, Sc)
Sup Red Norland	8,9	Pi	S	O	MT	MS-MD	MS-MD	4	JER, Sk, Shatter, Irr, Rough
Superior	2,3,4,5	Bu	SN	O-R	SF	MD	D	6	Irr, Ct, Sp, (PE)
Yukon Gold	4,5	W-Y	RS	O-R	MT	S	MD	7	Sl Irr, Pi Buds, Lt YF, (PE, Rot)
AF1437-1	4,5	Bu	SN	O-R	MT	MS	MD	4	Irr, Sp, Dumbells, (JER,PE,L,Sc)
AF1615-1	4,5	Bu	RS-SN	O-R	MT	S	MS	7	Sl Irr, "Nice Superior"
AO82611-7	10,11	B	MR	L	MT	S	S	6	Irr, Kn, Sl Pointed (PE)
B0766-3	4,5	Bu-T	SN	O-R	MT	MS	MD	5	Irr, BWF
B0811-4	8,9	Pi	S	R	R	MS	MS	7	Irr, some SS, Small
B1429A-3	4,5	Bu	SN	R-O	MT	MS	MS	7	"Nice Superior" (PE)
B1523-4	8,9	MR	RS	R	MT	MS-MD	MD	5	Sp, Sk, St
NY103	4,5,6,7	W	RS	O-R	MT	MS	MS	7	Sl Irr,(Rot)
NY112	4,5	T	N	O-R	MT	MS	MD	6	OK except for net and Int Nec
NY115	4,5,6,7	Bu	RS	O-R	SF-MT	MS	MS	8	Sl Irr, Sp, Ct
NY118	8,9	LR	SN	R-O	MT	MS	MS	6	Sk, Sl Irr, St
NY121	6,7	Bu	SN	R	R	MS	MS	7	Small, Sl Irr
NY123	6,7	Bu	RS	R	MT	MS	D	6	Irr, DSE, (rot)
R17-106	6,7	Bu	SN	O-R	MT	S	D	6	Variable
R17-7	6,7	Bu	SN	R-O	MT	MS	MD	6	Sl Irr
S14-2	6,7	Bu	SN	R	MT	MS	D	3	Irr, Lumpy
S28-2	6,7	BuY	SN-N	O	MT	S	MS	5	Irr, Dumbells, Lt YF
S300-7	6,7	Bu	SN	R	MT-SF	S	MD	7	Irr
S32-3	6,7	Bu	SN-RS	O-R	MT	MS	MD	7	Sl Irr
S33-5	6,7	Bu	SN-N	R-O	MT	MS	MD	5	Irr, Shatter
S45-5	8,9	Pu	RS	O	SF-MT	MS	MS-MD	5	PuF, Some Sp, Sl Irr (PiRot)
S45-7	8,9	Pu	S	O	MT	MS	MD	6	Mottled PuF, SS, Varietal Mix
S48-6	8,9	DR	S	O-R	MT	MS	MS	7	Mottled PiF, Sl Irr, (Pink Rot)
S49-3	8,9	Pu	S	O	MT	S	S	8	Iridescent Skin, Mottled Pu F
T17-2	8,9	M-DR	S	O-R	R	S	S	8	Attractive, Pink Flesh

COLOR: B=brown, Bu=buff, Pi=pink, Pu=purple, R=red, T=tan, W=white. Modifiers: L=light, M=medium, D=dark.

TEXTURE: N=netted, R=russet, S=smooth. Modifiers: H=heavy, M=moderate, R=Relatively, S=Slightly.

SHAPE: L=long, O=oblong, R=round. EYE DEPTH: D=deep, M=moderate, S=shallow.

TUBER DEPTH: MT=medium thick, R=round, F=flattened, SF=slightly flattened.

COMMENTS: Abbreviations in() are major defects. AE = apical eyes, B =bright, Ct=Chain Tubers, F= flesh, Irr=irregular, Kn=knobs, L=prominent lenticels, Lt = light, PE = Pink Eye, Pi=pink, Sc=scab, SE = stem end, Sk=skinned, Sl=slightly, Sm=small, Sp=sprouts, St=Stolons, SS=Silver scurf, VD = vascular discoloration

Long Island Table 2. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of early white-skinned clones grown at Riverhead, N.Y. - 1999 <sup>1</sup>

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Appear- ance	Spec Grav <sup>2</sup>
		cwt/A	percentage of standard	2 - < 2"	2.5 - 2.5"	3.25 - 3.25"	4" 4"	> 4"		
<b>Season-131 days</b>										
Superior	578	500	100	13	19	53	14	0	5.5	66
Andover	544	517	103	5	20	62	13	0	7.3	70
Eramosa	394	370	74	6	22	63	9	0	7.3	70
<i>Fishers Protected</i>										
LSD (0.05)	(137)	ns								(3)

<sup>1</sup> Planted on 4/18/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, harvested on 8/17

<sup>2</sup> 1.0 is excluded from specific gravity readings.

Long Island Table 3. Maturity, tuber shape, and internal and external defects of early white-skinned varieties grown at Riverhead, N.Y. - 1999

Clone	Mat <sup>1</sup> on 8/17/99	Tuber Shape	Tuber Defects (%)					Percentage				
			Sun- Total	Mis- burn	Growth shapen	cracks	Other <sup>2</sup>	Hollow heart	Brown center	Internal Necrosis		
Superior	4	O - R	10	1	9	1	0	0	0	8	0	0
Andover	5	O - R	2	0	2	0	0	0	0	0	0	0
Eramosa	3	O	3	0	3	0	0	0	0	0	0	0

<sup>1</sup> See rating system outlined in the text. Mat = maturity

<sup>2</sup> Other includes defects such as rhizoctonia, prominent lenticels, pink eye, decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.



Long Island Table 4. Yield, marketable yield, percentage of yield by grade, size distribution, appearance and specific gravity of NE184 white-skinned clones grown at Riverhead, N.Y. - 1999 <sup>1</sup>

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Appear- ance	Spec Grav <sup>2</sup>
		cwt/A	percent of std	2 - < 2"	2.5 - 2.5"	3.25 - 3.25"	4 - 4"	> 4"		
<b>Season 154 Days</b>										
Katahdin	654	557	100	13	14	51	20	2	5.5	60
Atlantic	705	558	100	15	10	45	24	6	5.5	70
Kennebec	696	460	82	30	12	38	16	4	3.5	61
Norwis	653	464	83	15	5	35	31	14	3.8	58
Superior	701	591	106	14	15	54	15	1	4.5	62
Yukon Gold	615	509	91	12	11	50	22	6	6.5	68
AF1437-1	752	547	98	27	16	42	14	0	4.3	58
AF1615-1	751	680	122	9	21	56	13	1	7.3	61
B0766-3	733	596	107	9	7	34	40	10	4.5	62
NY103	654	571	103	11	11	49	27	2	7.3	62
NY112	830	735	132	8	10	51	28	4	6.3	66
NY115	740	676	121	8	20	55	17	1	6.5	64
B1429A-3	711	641	115	8	16	61	13	2	6.8	64
<i>Fishers Protected</i>										
LSD (0.05)	(79)	(85)								(4)

<sup>1</sup> Planted on 4/8/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/9/99, harvested on 10/6/99.

<sup>2</sup> 1.0 is excluded from specific gravity readings.

Long Island Table 5. Maturity, tuber shape, and internal and external defects of NE184 white-skinned varieties grown at Riverhead, N.Y. - 1999.

Clone	Mat <sup>1</sup>		Tuber Defects (%)					Percentage				
	on 8/17/99	Tuber Shape	Total	Sun- burn	Mis- shapen	Growth cracks	Other <sup>2</sup>	Hollow heart	Brown center	Internal Necrosis		
										Sl.	Mod.	Sev.
Katahdin	7	O - R	8	3	1	1	3(JER)	10	30	8	0	0
Atlantic	5	R - O	13	3	9	0	1	8	13	15	33	48
Kennebec	6	O	26	5	15	3	4(JER)	3	3	5	0	0
Norwis	5	O	14	1	5	8	0	3	5	25	15	5
Superior	4	O - R	11	2	7	0	1	0	0	8	0	0
Yukon Gold	4	O - R	10	2	5	0	2	0	5	10	0	0
AF1437-1	6	O - R	22	1	13	3	5(JER)	0	3	0	0	0
AF1615-1	7	O - R	5	1	3	0	1	0	8	3	0	0
B0766-3	7	O - R	6	2	3	0	1	0	3	0	0	0
NY103	6	O - R	9	2	3	0	3(Rot)	0	8	0	0	0
NY112	7	O - R	6	3	0	0	3(PE)	3	0	25	23	5
NY115	6	O - R	3	2	1	0	1	0	0	5	0	0
B1429A-3	5	O - R	4	1	2	0	2	0	0	13	10	0

<sup>1</sup> See rating system outlined in the text. Mat = maturity

<sup>2</sup> Other includes defects such as rhizoctonia (Rh), prominent lenticels (L), pink eye (PE), jelly end rot (JER), decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 6. Yield, marketable yield, percentage of yield by grade, size distribution, appearance and specific gravity of Cornell white-skinned clones grown at Riverhead, N.Y. - 1999 <sup>1</sup>

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Appear- ance	Spec Grav <sup>2</sup>
		2-4" cwt/A	percent of std	2 to < 2"	2.5 to 2.5"	3.25 to 3.25"	4" 4"	> 4"		
<u>Season 154 days</u>										
Katahdin	646	549	100	9	13	48	24	6	6.3	58
Norwis	583	384	70	8	4	35	27	26	4.3	58
Reba	614	530	97	8	10	54	22	6	6.5	65
NY103	658	594	108	9	11	59	20	0	7.3	60
NY115	581	520	95	11	24	56	9	0	7.8	62
NY121	602	542	99	10	36	49	5	0	6.8	68
NY123	550	483	88	12	24	57	8	0	5.8	72
R17-7	854	738	134	12	18	54	14	1	6.0	58
R17-106	752	648	118	13	19	49	17	1	5.8	58
S14-2	592	527	96	9	15	55	19	2	2.8	67
S28-2	753	575	105	24	33	41	3	0	4.8	59
S32-3	636	554	101	13	19	61	7	0	7.0	59
S33-5	610	448	82	26	14	48	12	0	4.8	64
S300-7	462	436	79	6	26	63	6	0	6.8	63
<i>Fisher's Protected</i>										
LSD (0.05)	(79)	(85)								(4)

<sup>1</sup> Planted on 4/8/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/9/99, harvested on 10/6/99.

<sup>2</sup> 1.0 is excluded from specific gravity readings.

Long Island Table 7. Maturity, tuber shape, and internal and external defects of Cornell white-skinned varieties grown at Riverhead, N.Y. - 1999

Clone	Mat <sup>1</sup> on 8/17/99	Tuber Shape	Tuber Defects (%)					Percentage				
			Total	Sun- burn	Mis- shapen	Growth cracks	Other <sup>2</sup>	Hollow heart	Brown center	Internal Necrosis		
										Sl.	Mod.	Sev.
Katahdin	6	O - R	5	3	1	0	1	0	0	8	3	0
Norwis	5	O	6	1	3	2	1	10	10	23	5	0
Reba	4	O	6	2	2	0	2	0	8	8	3	0
NY103	5	O	7	1	4	0	2	3	5	15	0	0
NY115	4	O	5	1	3	0	1	0	0	13	0	0
NY121	4	R	2	0	1	0	1	0	8	5	0	3
NY123	4	R	6	2	4	1	0	3	5	5	3	0
R17-7	5	R	9	2	4	1	2	0	3	0	0	0
R17-106	5	O - R	9	2	4	1	2	0	0	5	0	0
S14-2	5	R	6	2	3	0	1	0	0	3	0	0
S28-2	6	O	15	1	13	1	1	0	0	3	0	0
S32-3	4	O - R	10	3	1	1	5	0	8	15	8	3
S33-5	4	R - O	23	0	19	2	1	0	0	20	3	0
S300-7	4	R - O	1	0	1	0	0	0	0	5	8	18

<sup>1</sup> See rating system outlined in the text. Mat = maturity.

<sup>2</sup> Other includes defects such as rhizoctonia (Rh), prominent lenticels (L), pink eye (PE), decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (.). Mechanical defects, however, were not scored.

Long Island Table 8. Yield, marketable yield, percentage of yield by grade, size distribution, appearance and specific gravity of red- & purple-skinned clones grown at Riverhead, N.Y. - 1999<sup>1</sup>

Clone	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Appear- ance	Spec Grav <sup>2</sup>
		2-4" cwt/A	percent of std	2 to < 2"	2.5 to 2.5"	3.25 to 3.25"	4" 4"	> 4"		
<b>Season 149 days</b>										
Chieftain	649	517	100	20	26	48	6	0	4.8	58
Redsen	356	327	63	8	39	48	5	0	7.0	60
Super Red Norland	509	385	74	21	17	40	19	3	3.5	58
B0811-4	328	238	46	27	61	11	0	0	6.5	60
B1523-4	751	678	131	10	22	61	8	0	5.3	59
NY118	643	579	112	10	23	60	7	0	6.0	58
S45-5	515	430	83	16	38	40	6	0	5.0	62
S45-7	532	415	80	22	45	30	3	0	6.0	58
S48-6	549	484	94	12	32	50	6	0	7.0	58
S49-3	548	468	91	15	56	27	2	0	7.5	58
T17-2	429	346	67	19	70	11	0	0	7.8	63
<i>Fisher's Protected</i>										
LSD (0.05)	(69)	(70)								(1)

<sup>1</sup> Planted on 4/13/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/9/99, harvested on 10/12/99.

<sup>2</sup> -1.0 is excluded from specific gravity readings.

Long Island Table 9. Maturity, tuber shape, and internal and external defects of red- & purple-skinned clones grown at Riverhead, N.Y. - 1999

Clone	Mat <sup>1</sup> on 8/17/99	Tuber Shape	Tuber Defects (%)					% Internal Defects				
			Total	Sun- burn	Mis- shapen	Growth cracks	Other <sup>2</sup>	Hollow heart	Brown center	Internal Necrosis		
										Sl.	Mod.	Sev.
Chieftain	5	O-R	12	0	12	0	0	0	0	38	3	0
Redsen	2	R-O	1	0	1	0	0	0	0	0	0	0
Sup. Red Nor.	4	O-R	15	1	3	1	11	0	25	13	8	10
B0811-4	3	R	1	0	1	0	0	0	0	0	0	0
B1523-4	6	R	4	0	2	0	1	0	0	0	0	0
NY118	5	O-R	4	0	3	0	0	0	0	0	0	0
S45-5	3	O	9	1	8	0	1	3	0	0	0	0
S45-7	4	O	8	1	7	0	0	0	0	0	0	0
S48-6	5	O-R	4	1	2	0	1	3	3	0	0	0
S49-3	4	O	3	2	1	0	0	0	5	0	0	0
T17-2	3	O	2	1	2	0	0	0	0	8	3	0

<sup>1</sup> -See rating system outlined in the text. Mat = maturity

<sup>2</sup> -Other includes defects such as rhizoctonia (Rh), prominent lenticels (L), pink eye (PE), decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.

Long Island Table 10. Yield, marketable yield, percentage of yield by grade, size distribution, appearance and specific gravity of NE184 russet-skinned clones grown at Riverhead, N.Y.-1999 <sup>1</sup>

Clone	Total Yield cwt/A	Marketable Yield		% Size(oz) Distribution					Appear- ance	Spec Grav <sup>2</sup>
		4-16 oz cwt/A	percent of std	< 4	4 to 8	8 to 12	12 to 16	> 16		
Season 149 days										
Rus Norkotah	513	358	100	23	30	26	14	7	6.8	64
Rus Norkotah 3	532	271	76	40	20	21	9	9	6.3	65
Rus Norkotah 8	579	341	95	28	21	27	11	13	6.5	64
AO82611-7	692	317	89	52	24	18	4	2	5.8	76
Fisher's Protected										
LSD (0.05)	(52)	(45)								(4)

<sup>1</sup> Planted on 4/13/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/9/99, harvested on 10/12/99.

<sup>2</sup> 1.0 is excluded from specific gravity readings.

Long Island Table 11. Maturity, tuber shape, and internal and external defects of NE184 russet-skinned clones grown at Riverhead, N.Y. - 1999

Clone	Mat <sup>1</sup>		Tuber Defects (%)					Percentage				
	on 8/17/99	Tuber Shape	Total	Sun- burn	Mis- shapen	Growth cracks	Other <sup>2</sup>	Hollow heart	Brown center	Internal Necrosis		
										Sl.	Mod.	Sev.
R.Norkotah	4	L	11	1	5	0	6(PE,Sc)	0	0	0	0	0
R.Norkotah 3	8	L	31	1	23	0	7(PE,Sc)	5	0	0	0	0
R.Norkotah 8	5	L	19	1	10	1	7(PE,Sc)	0	0	5	0	0
AO82611-7	7	L	42	0	30	6	5(PE)	0	0	3	3	0

<sup>1</sup> See rating system outlined in the text. Mat = maturity

<sup>2</sup> Other includes defects such as scab (Sc), prominent lenticels (L), pink eye (PE), decay and other defects scorable against a U.S. No. 1 grade, primary defects listed in (). Mechanical defects, however, were not scored.



Long Island Table 12. Yield and quality of early selection lines and recently named varieties in a non-replicated observation trial. - Riverhead, NY 1999 <sup>1</sup>

Clone	Yield (cwt/A)		% of standard 2 to 4"	% Defects	Spec. <sup>2</sup>	% Internal Defects										Eye Depth		Appearance	Comments <sup>3</sup>		
	Total	2-4"				HH	BC	SI.	M	Internal Necrosis				Depth	Shape	Texture	Color			Lateral	Apical
										S	S	S	S								
White-skinned clones																					
Katahdin	657	551	100	7	60	0	0	7	3	3	W	RS	O-R	SF	S	MD	6	SI Irr, Sc, Mystery			
Andover	713	670	122	5	70	10	0	0	0	0	Bu	SN	R-O	MT	S	MS	7				
Eramosa	405	375	68	4	65	0	0	0	0	0	Bu	RS-SN	O	F	S	S	7	SS			
Gr. Mount.	580	379	69	31	78	0	0	30	0	0	W	RS	O	SF	D	D	4	Irr			
Norwis	648	561	102	1	59	10	0	30	20	10	W	S	O	SF	MD	D	5	Irr			
Saginaw Gold	671	559	101	15	63	0	0	25	15	0	W	RS	O	SF	S	S	5	Irr, LtY Flesh			
AF2018-4	485	443	80	7	59	0	0	0	0	0	Bu	RS	O	SF-F	S	MS	5	BI Dot, SS, Mystery			
ARS-W95-6553	718	648	118	3	68	10	10	20	10	0	Bu	RS	R	MT	S	MS	7	SI Irr, Sc			
B1316-5	767	634	115	15	69	10	80	30	20	20	BW	S	O	MT	S	MS	7	SI Irr, Sc			
B1316-13	549	499	91	6	64	0	40	0	0	0	BW	S	R-O	MT	S	VD	5				
B1801-3	564	483	88	7	63	0	10	30	10	20	Y-Bu	RS	R-O	R	S	S	7	LtY Flesh			
B1806-8	791	662	120	8	62	0	0	10	0	0	W	RS	O	SF	S	MD	6	Kn,LtY Flesh			
B1878-7	737	614	111	10	58	0	0	0	0	0	Bu	SN	O-R	MT-SF	S	MS	6	Irr, Stem end decay			
B1899-9	1020	828	150	17	70	0	0	0	0	0	W	RS	O-L	SF-F	S	MS	5	Irr			
NY121	696	641	116	3	67	0	10	0	0	0	W	RS	R	R	MS	MD	6	DSE, Irr			
T2-2	706	612	111	9	64	0	0	0	0	0	Y-Bu	SN	O-R	SF-MT	S	D	5	Irr, LtY Flesh, Mystery			
T4-7	713	676	123	2	64	0	0	0	0	0	Bu	RS	R	R	MS	D	6	Squatty			
T20-15	756	697	126	4	59	10	10	30	0	10	BW	RS	R	R	MD	D	4	Squatty, DSE, Mystery			
T27-21	943	737	134	16	58	0	0	0	0	0	W	RS	R-O	MT	S	D	6	Some Sc, Sp, Mystery			
T27-21	1027	813	148	18	58	0	0	10	0	0	W	RS-SN	R-O	MT	S	D	7	Sc			
T35-34	847	765	139	7	68	0	0	0	0	0	W	RS	O-R	MT	S	MS	7	Mystery			
T35-34	884	791	144	6	70	0	0	20	0	0	Bu	SN	R	MT	MS	MS	6	SI Irr, Mystery			
T35-8	754	659	120	2	70	0	0	0	0	0	Bu	N	R	SF	MS	MD-D	6	Some Sc			
T36-13	697	647	117	3	63	0	0	20	10	0	W	RS	O-R	MT	S	MS	7	Sc, SI Irr			
T36-13	846	806	146	1	61	0	0	0	0	0	W	RS	O-R	SF	S	D	7	SI Irr			
T37-3	811	731	133	3	66	0	0	0	0	0	BW	SN-N	O-R	MT-SF	S	MS	7	Bright			
T38-9	685	586	106	8	73	0	0	40	10	0	Bu	SN-N	R-O	R	S	MS	6	SI Irr			
T43-27	909	545	99	15	60	0	0	40	0	10	W	RS	O-R	MT	S	MS	6	Big, Sc, L			
T43-27	695	536	97	17	63	0	0	10	10	0	BW	S	R	MT	MS	MS	6	Some pointed			
T44-8	524	473	86	5	67	0	0	10	0	0	W	RS	R-O	MT	S	MD-D	6	SI Irr			
T45-7	790	613	111	19	58	0	0	10	0	0	BW	S	R	MT	MD	VD	5	Irr, Mystery-stem symp			

Long Island Table 12. Yield and quality of early selection lines and recently named varieties in a non-replicated observation trial. 1999 -continued

Clone	% of		% Internal Defects										Spec. <sup>2</sup>		Eye Depth				Appear- ance	Comments <sup>3</sup>
	Yield (cwt/A)		Internal Necrosis												Lateral		Apical			
	Total	2-4"	standard	2 to 4"	Defects	%	Grav.	HH	BC	SI.	M	S	Color	Texture	Shape	Depth				
Red-skinned clones																				
Chieftain	723	690	100		3	60		0	0	40	30	0	PI	S	O-R	MT	MS	MS	6	Sk
B1495-6	464	410	59		0	58		0	0	0	0	0	DR	SN	R-O	F	S	MD	6	Some Sp, SIY Flesh
B1758-4	808	689	100		9	65		0	40	0	0	0	DR	S	R-O	MT	MS	MD	6	SI Irr, Some Sp
B1763-4	577	549	80		1	61		0	0	0	0	0	Pi	N-SN	R	R	Ms-MD	MD	6	SI Irr
T10-1	664	517	75		3	58		0	0	0	0	0	MR	RS	O-R	MT	S	MS	6	SI Irr
T10-3	644	543	79		7	58		0	0	0	0	0	L-MR	SN-MR	O-R	MT	MS	MS	6	Variable color, JER
T10-3	703	605	88		9	58		0	0	0	0	0	MR	RS	O-R	MT	MS	MD	6	Some pear & Sk
T14-1	510	453	66		4	58		0	0	0	0	0	MR	SN	R-O	MT	S	MS	6	L, Irr
T15-3	820	696	101		5	58		0	0	0	0	0	M-DR	RS	R	MT	MS-D	MS-D	6	Sk, Irr, Sc, Rot
T17-2	500	470	68		1	64		0	0	10	10	0	BR	O	O-L	MT	S	S	8	Mottled Pi Flesh
T8-3	509	447	65		1	58		0	0	0	0	0	MR	SN	R-O	MT	MS	MD	6	
Russet-skinned clones																				
Rus. Nork	637	362	100		12	65		0	0	0	0	0	B	MR	L	SF	S	S	7	Sc, PE
B1463-1	462	402	111		1	65		0	0	0	0	0	B	HR	L	0	S	S	9	

Long Island Table 13. Yield and quality of specialty varieties and diploid clones in a replicated observation trial. - Riverhead, NY 1999 <sup>1</sup>

Clone	Yield (cwt/A)		% Defects	Spec. <sup>2</sup>	% Internal Defects								Eye Depth				Comments <sup>3</sup>
	Total	2-4"			Grav.	HH	Internal Necrosis				Color	Texture	Shape	Depth	Apical		
							BC	SI.	M	S					Lateral	Apical	
Yellow Finn	852	633	15	69	0	0	0	0	0	Bw Y	SN	O-R	MT	MD	MD	4	Sm Kn on AE,LtYF,Ct
Ger. Butterball	676	443	10	67	0	0	60	27	0	Y-Bu	N	R	R	S	MS	4	PE,LtY Flesh
Aust.Crescent	330	69	11	52	0	0	0	0	0	Y-Bu	RS	L	R	M	MS	6	All mishapen, LtY Flesh
BD113-3	152	47	6	0	0	0	0	0	0	W	SN	R	R	MD	MD	2	Bright Y-Orange F, Pi eyes
BD132-2	402	307	9	19	0	0	0	0	0	W	S	O	SF-R	S	S	2	LtY Flesh

<sup>1</sup> Planted on 4/13/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/9/99, harvested on 10/15/99.<sup>2</sup> 1.0 is excluded from specific gravity readings.<sup>3</sup> See footnotes in Table 1.

Clones with poor yield and/or appearance: White-skinned-AF2005-2, AF2005-3, AF2015-16, AF2032-1, AF2032-3, AF2204-2, ARS-W95-6500, B1339-2, B1463-12, B1712-18, B1752-5, B1801-6, B1805-6, B1870-17, B1873-4, S28-2, S300-7, T3-5, T3-9, T3-11, T4-7, T27-13, T28-1, T35-5, T35-19, T35-30, T38-13; Red and purple-skinned - B1492-12, B1521-2, B1529-1, B1558-3, B1809-3, B1811-1, B1816-5, T14-1, T15-2, T15-7.



Long Island Table 14. The effect of N rate and spacing on yield, marketable yield, % of yield by grade, size distribution and specific gravity of NY103 grown at Riverhead, N.Y. - 1999 <sup>1</sup>

lb N/A	Spacing	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Appear- ance	Spec Grav <sup>2</sup>
			2-4" cwt/A	% of standard	< 2"	2 - 2.5"	2.5 - 3.25"	3.25 - 4"	> 4"		
160	6"	624	571	100	8	19	56	17	0	7	65
160	9"	612	539	94	12	14	54	20	0	7	63
200	6"	561	504	88	10	22	57	11	0	8	62
200	9"	589	516	90	12	15	57	16	0	7	66
250	6"	600	543	95	8	21	57	12	1	7	65
250	9"	569	510	89	9	18	60	13	1	7	64
Main Effects											
N Rate	160	618	555								64
	200	575	510								64
	250	584	526								64
Spacing	6"	569	510								64
	9"	569	510								65

Long Island Table 15. The effect of N rate and spacing on yield, marketable yield, % of yield by grade, size distribution and specific gravity of NY115 grown at Riverhead, N.Y. - 1999 <sup>1</sup>

lb N/A	Spacing	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Appear- ance	Spec Grav <sup>2</sup>
			2-4" cwt/A	% of standard	< 2"	2 - 2.5"	2.5 - 3.25"	3.25 - 4"	> 4"		
160	6"	566	513	100	8	23	56	11	1	7	65
160	9"	544	486	95	9	18	57	14	2	7	63
200	6"	544	497	97	8	19	55	17	1	7	66
200	9"	511	456	89	9	15	58	16	2	7	65
250	6"	519	474	92	7	19	58	14	1	8	66
250	9"	514	484	94	6	18	59	18	0	7	68
Main Effects											
N Rate	160	555	500								64
	200	528	477								66
	250	517	479								67
Spacing	6"	543	495								66
	9"	523	475								65

<sup>1</sup>Planted on 4/15/99, fertilizer rate was 100, 140, or 190 -200-200/A at planting plus 60 lb N/A sidedressed, vine killed on 9/9/99, harvested on 10/19/99. There were no significant main effects or interaction.

<sup>2</sup>-1.0 is excluded from specific gravity readings.

Long Island Table 16. The effect of 2,4-D applications on yield, marketable yield, % of yield by grade, size distribution and specific gravity of NY118 and Chieftain grown at Riverhead, N.Y.-1999 <sup>1</sup>

2,4-D Application oz LV 4 Ester/A	Total Yield cwt/A	Marketable Yield		Size Distribution (%)					Color <sup>2</sup>	Spec Grav <sup>3</sup>
		cwt/A	percent of std	< 2"	2 - 2.5"	2.5 - 3.25"	3.25 - 4"	> 4"		
NY118										
No Spray	260	232	100	11	22	57	10	0	LR - Pi	58
2.3 oz - once	224	199	85	11	24	60	5	0	L - DR	58
2.3 oz - twice	238	210	90	12	33	50	6	0	M - DR	58
1.0 oz - once	247	223	96	10	26	51	13	0	L -MR	58
Significance level	ns	ns								
Chieftain										
No Spray	261	239	100	8	28	58	5	0	MR	59
2.3 oz - once	280	260	109	7	30	59	4	0	MR	59
2.3 oz - twice	297	270	113	9	32	51	8	0	MR	60
1.0 oz - once	306	276	115	10	32	52	6	0	MR	60
Fisher's Protected LSD (0.05)	ns	ns								(2)

<sup>1</sup> Planted on 4/13/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/3/99, harvested on 9/29/99. First and single applications were made on 6/12/99 and the second application was made on 6/29/99.

<sup>2</sup> L = light, M = medium, D= dark, R = red, Pi = pink.

<sup>3</sup> -1.0 is excluded from specific gravity readings.

Long Island Table 17. The effect of herbicide applications on yield, marketable yield, % of yield by grade, size distribution, and specific gravity on NY115 grown at Riverhead, N.Y. -1999<sup>1</sup>

Material	Treatment		Total Yield cwt/A	Mkt. Yield		Size Distribution (%)				Specific Gravity <sup>2</sup>
	Rate	Timing		2-4" cwt/A	percent of std	< 2"	2 - 2.5"	2.5 - 3.25"	3.25 - 4"	
None	(hand weeded)		385	360	100	6	18	63	13	68
Sencor 75%	0.67 lb	pre	361	342	95	5	19	63	13	68
Lorox 50%	2 lb	pre	373	353	98	5	21	65	9	64
Dual 8E	2 pts	pre	339	318	88	6	23	61	10	68
Sencor 75%	0.67 lb									
+ Dual 8E	+ 2 pts	pre	357	336	93	6	23	62	9	65
Lorox 50%	2 lb									
+ Dual 8E	+ 2 pts	pre	369	349	97	5	23	59	12	64
Sencor 75%	0.67 lb	pre								
	0.33 lb	post	388	369	103	5	18	65	12	65
Matrix 25%	1.5 oz	pre	287	267	74	7	29	57	6	68
Matrix 25%	1.5 oz	post	269	249	69	7	29	56	8	68
<i>Fisher's Protected</i>										
<i>LSD (0.05)</i>			(64)	(65)						(3)

<sup>1</sup> Planted on 4/13/99, fertilizer rate was 100-200-200/A plus 60 lb N/A sidedressed, vine killed on 9/3/99, harvested on 9/29. Pre applications were made on 4/27/99, post applications were made on 5/15/99.

<sup>2</sup> -1.0 is excluded from specific gravity readings.

Long Island Table 18. After-cooking darkening and blackspot ratings of clones grown in 1998.

White 2				White 3				Red			
1998 Tables 4-5				1998 Tables 6-7				1998 Tables 8-9			
Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS	Clone	ACD	BS
Katahdin	5.0	5.9	Katahdin	5.0	5.8	Katahdin	4.9	5.9	Chieftain	5.0	6.0
Allegany	5.0	5.4	Carla	5.0	6.0	NY101	4.9	5.9	Dark Red Norland	4.9	6.0
Atlantic	5.0	5.7	Norwis	5.0	6.0	NY103	4.9	6.0	Redsen	4.5	6.0
Kennebec	5.0	5.9	B0178-34	4.5	5.4	NY110	5.0	5.9	Rideau	5.0	6.0
Norwis	5.0	5.9	B0564-8	4.5	5.3	NY112	4.7	5.8	B0811-4	5.0	5.2
Reba	4.9	5.8	B0564-9	5.0	5.4	NY115	4.3	6.0	B0811-13 (NE)	5.0	6.0
Yukon Gold	5.0	5.9	B0766-3	5.0	4.6	NY119	4.9	6.0	B0811-13 (USDA)	4.9	5.9
AF1437-1	5.0	6.0	B1110-11	4.6	5.1	NY121	5.0	5.8	B0852-7	4.9	5.9
AF1475-20	4.7	5.9	B1214-7	5.0	5.5	NY122	5.0	6.0	B0967-11	4.9	5.9
AF1606-8	4.0	5.6	B1240-14	5.0	5.5	R6-4	5.0	5.8	B0984-1	4.8	5.8
AF1615-1	5.0	5.9	B1248-5	4.8	4.2	R17-2	4.9	5.9	B1145-2	5.0	5.9
B0564-8	4.9	5.0	B1321-21	4.7	6.0	R17-7	4.8	6.0	B1493-3	4.9	6.0
B0766-3	4.9	5.0	B1415-7	4.2	5.6	R17-11	4.8	5.9	NY118	5.0	6.0
NY103	4.7	5.6	B1425-9	5.0	5.3	R17-19	4.5	5.9			
			B1429A-3	5.0	5.6	R17-106	4.5	5.9			
			B1478-8	4.9	5.8	R41-11	4.6	6.0			

*Fisher's Protected*

LSD (0.05)	(0.2)	(0.4)	(0.3)	(0.4)	(0.4)	NS	(0.2)	(0.2)
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After-cooking darkening (ACD) rating based on a scale of 1 to 5; 1 = severe darkening, 5 = no after-cooking darkening.

Five tubers rated per replication, four replications in each experiment. Tubers were peeled and dipped in a 0.5% solution of sodium bisulfite and cooked in an autoclave for 7 minutes and rated after 20 minutes. Blackspot (BS) determinations are based on approximately ten tubers per replication. Tubers were stored at 40° F and bruised between 2/8/99 and 3/3/99 and then stored at 55° F. Bruised areas were peeled and evaluated two days after impact. Each tuber received a blow in each of two locations about 1 to 2 cm from the stem end. The bruising was done by dropping a 300 gram weight a distance of 30 cm. The point of impact was marked by inking the base of the weight. Blackspot ratings are based on a scale of 1 to 6 with 1 = severe discoloration and 6 = no discoloration.

## New York – Upstate

D.E. Halseth, W.L. Hymes and R.L. MacLaury

### Program Scope:

Potato variety yield trials were conducted in four counties in upstate New York in 1999 in which a total of 33 named and 48 numbered clones were evaluated. Six replicated yield trials were conducted at the Thompson Vegetable Research Farm at Freeville in Tompkins County on a Howard gravelly loam soil. Grower trials were conducted on muck soil near Elba (Orleans County) and mineral soils near Arkport (Steuben County) and North Java (Wyoming County). All trials at Freeville and on grower cooperator farms were grown using standard commercial cultural practices. The 1999 growing season was 3 degrees warmer and had 20% less rainfall than a 24 year average. Trials at the Cornell research farm at Freeville were irrigated 6 times, the North Java trial 4 times, while the trial at Arkport had two late summer applications. As evaluation of potato lines with golden nematode (GN) resistance is of high priority for New York, 13 named and 39 numbered entries included in this report have GN resistance. Marketable yield, tuber quality and appearance, maturity, storage life and processing potential are among the important characteristics which are evaluated.

**Note:** Table headings format and rating system is from Regional Project NE-184.

### Research Farm Results:

In the early maturity trial six breeding lines out-yielded Superior, the potato industry standard for earliness. S28-2 was by far the highest yielder, with 518 cwt/acre marketable yield, 157% higher than Superior. S28-2 had the highest tuber set while AF1938-3 had the highest average tuber weight. AF1437-1 had the lowest specific gravity and appearance scores while Andover had the highest ratings in both attributes.

Only Salem and S32-3 had higher marketable yield than Atlantic in the medium maturity trial. Salem had the lowest specific gravity and S32-3 has the highest tuber set. B0766-3 was much later in vine maturity and probably should have

been in the medium-late trial. AF1907-6 and S32-3 had very good tuber appearance.

The medium-late maturity trial had a total of eighteen entries, but only Keuka Gold, NY112 and Snowden had marketable yield higher than Atlantic. Keuka Gold, as in the past several seasons, was the highest yielder with 524 cwt/acre marketable yield. It also had the highest tuber set and some internal necrosis. Eva had the best tuber appearance score. AF1615-1 and NY120 had significant levels of vascular discoloration. Kennebec and NY123 produced the highest percentage of external defects.

NYL235-4 was the only entry in the late maturity trial with fifteen entries that had marketable yield above that of Atlantic. It also had the highest tuber set and was among the highest in external defects. Genesee had the lowest specific gravity and the best tuber appearance rating. Elba was the latest in maturity while S197-12 was the earliest. B0178-34 continues to have a high percentage of vascular discoloration.

There are few GN resistant red-skinned clones currently available. In the red/purple-skinned trial 16 GN resistant clones were compared to Chieftain (GN susceptible), the industry standard for high yielding reds. Of the reds S48-6 had higher marketable yield than Chieftain, while S49-3 and U71-2 were within 98% of Chieftain's yield. NY118 had the best tuber appearance rating, while the GN susceptible variety Super Red Norland had a high percentage of external defects.

The russet-skinned and long tuber trial had nine entries (all russet, except Shepody). When grown in NY, Russet Burbank, the industry russet standard, usually has very good total yields but very low marketable yields due to high levels of defects such as knobs and growth cracks. Amey is the only GN resistant russet variety available in the US and in this trial had excellent tuber appearance and 18% more marketable yield than Russet Burbank. Three Russet Norkotah selections were tested, with clone #8 having significantly higher yield than the other two, and was also the best yielder of all entries in the russet trial (49% more marketable yield than Russet Burbank).



### **Grower County Trial Results:**

Twenty-four white and red skinned varieties and numbered clones were evaluated on muck soil near Elba, Orleans County, for suitability for the tablestock market. Keuka Gold, NY115, NY118, Reba and Salem were equal or higher in marketable yield than Katahdin. Note that the GN resistant red-skinned NY118 had the highest production with 403 cwt/acre marketable yield and also the highest tuber set. NY123 had the highest specific gravity (1.082), while Super Red Norland was the lowest (1.061).

The Steuben and Wyoming County chip processing trials had 14 GN resistant clones and one GN susceptible variety (Snowden) grown on mineral soils. Pike, NY112 and R17-1 averaged the highest yields over both trials. S197-12 had the lowest tuber set while R17-106 and Snowden generally had the highest tuber set. Atlantic, Snowden and S111-28 had the highest specific gravities, while R17-106 was the lowest for both counties. Kanona, Snowden, NY120 and S14-12 had significant vascular discoloration in the Steuben trial.

### **Acknowledgements:**

These trials were funded in part by the Empire State Potato Growers, Inc., and other grower contributions. Cooperative Extension agents Carl Albers, Chuck Bornt and Steve Childs coordinated grower trial work in their counties. Special thanks is given to grower-cooperators: Murray Mahany and family, Jim McCormick of McCormick Farms and Guy Smith of Triple G Farms, Inc. Seed of new clones was provided by: Dr. Robert Plaisted, Cornell University; Dr. Kathleen Haynes, USDA; and Drs. Alvin Reeves and Gregory Porter, University of Maine. Donation of seed by Kent Farms, Inc., Bob Leavitt Farms, Inc., and Schafer Farms is greatly appreciated. The Freeville farm manager and crew are acknowledged for their excellent maintenance of the research plots.



**Upstate New York Table 1.** Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the early maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class <sup>1</sup> _____ (% of total yield)					Size Distrib. (%)			Mean Tuber		Spec. Grav.
			1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.	#/ft	wt(oz)		
AF1437-1	465	362	110	3	24	50	13	11	86	63	7.3	6.6	62
AF1938-3	447	351	106	3	21	46	17	13	84	63	6.6	7.1	74
Andover	342	311	94	2	29	57	9	4	95	66	5.7	6.3	79
B1429A-3	431	401	121	4	39	46	10	1	96	56	8.1	5.5	75
S28-2	550	518	157	3	37	53	7	0	97	60	10.0	5.7	71
S33-5	456	428	130	2	22	59	13	4	94	72	6.9	6.9	75
S300-7	376	363	110	3	43	49	5	0	97	53	7.0	5.6	75
Superior (std)	350	330	100	3	49	43	5	1	97	48	7.2	5.1	71
Waller-Duncan													
LSD (k=100)	65	65									0.85	0.72	2
C.V. (%)	(11)	(12)									(8)	(8)	(2)
<sup>1</sup> Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"													
Plant Date: May 3			Maturity Ratings: Aug 20			Mow Vine Date: Aug 23			Harvest Date: Aug 24				

**Upstate New York Table 2.** Plant maturity, tuber shape and appearance, and external and internal tuber defects for the early maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Plant <sup>1</sup> Mat. At Vinekill	Tuber Data <sup>1</sup> Shape	External Tuber Defects (%)										Int. Tuber Defects (%) <sup>2</sup>			
			Appear.	Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.					
AF1437-1	5.0	2.0	5.3	8.3	1.0	0.6	6.5	0.2	2.5	0.0	2.5					
AF1938-3	5.3	2.0	7.5	5.8	2.7	0.3	2.6	0.1	0.0	0.0	0.0					
Andover	1.8	3.0	8.0	4.0	1.6	1.5	0.5	0.4	0.0	0.0	0.0					
B1429A-3	3.0	2.0	6.8	2.8	0.8	0.4	0.6	1.0	0.0	2.5	0.0					
S28-2	4.4	5.0	6.5	2.5	2.2	0.3	0.0	0.0	0.0	12.5	0.0					
S33-5	2.5	1.0	7.4	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0					
S300-7	4.1	1.0	7.4	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0					
Superior (std)	1.0	2.0	6.3	2.1	0.4	1.3	0.2	0.1	0.0	2.5	2.5					

<sup>1</sup> See the standard NE184 rating system for a key to these ratings.

<sup>2</sup> Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

**Upstate New York Table 3.** Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	Size Distrib. by Class <sup>1</sup> — (% of total yield) —										Size Distrib. (%)		Mean Tuber		Spec. Grav.
			std	1	2	3	4	5	to 4 in.	1 7/8	2 1/2	to 4 in.	1 7/8	2 1/2	#/ft	wt(oz)	
AF1907-6	399	306	78	2	22	51	20	6	92	70			5.6	7.7	67		
AF1921-9	427	343	87	5	30	48	11	6	89	59			7.6	5.8	75		
Atlantic (std)	489	394	100	4	26	46	15	9	87	61			7.7	6.6	88		
B0564-9	389	332	84	5	23	50	16	5	89	66			6.3	6.4	75		
B0766-3	466	349	89	4	18	47	20	12	84	67			6.6	7.4	84		
Monona	357	306	78	5	31	47	13	4	91	60			6.2	6.0	72		
Salem	497	406	103	5	30	42	17	6	89	59			8.8	5.9	66		
S32-3	508	450	114	5	47	43	3	1	94	47			10.4	5.1	76		
Yukon Gold	426	362	92	4	29	48	12	7	89	60			7.0	6.4	81		
Waller-Duncan																	
LSD (k=100)	40	62											1.1	1.0	3		
C.V. (%)	(7)	(12)											(11)	(10)	(3)		

<sup>1</sup>Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 3      Maturity Ratings: Aug 25      Vine-Kill Date: Aug 25      Harvest Date: Sept 2

**Upstate New York Table 4.** Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Plant <sup>1</sup>		External Tuber Defects (%)					Int. Tuber Defects (%) <sup>2</sup>			
	Mat. At Vinekill	Tuber Data <sup>1</sup> Shape	Appear.	Total	Sun-Green	Mis-shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
AF1907-6	1.4	1.0	7.6	15.5	6.2	0.4	8.4	0.4	2.5	5.0	7.5
AF1921-9	1.1	3.0	7.1	8.7	5.0	3.0	0.1	0.6	0.0	0.0	0.0
Atlantic (std)	3.4	1.0	6.8	6.9	2.7	2.4	1.0	0.7	2.5	0.0	0.0
B0564-9	1.1	1.3	7.0	4.1	3.3	0.7	0.1	0.2	5.0	0.0	0.0
B0766-3	6.9	1.0	6.9	8.8	5.8	0.7	1.6	0.6	0.0	0.0	0.0
Monona	4.3	3.5	5.8	5.5	1.7	2.8	0.5	0.5	2.5	10.0	2.5
Salem	3.6	2.0	7.1	7.1	3.5	2.6	0.4	0.7	0.0	5.0	0.0
S32-3	2.0	3.0	7.5	5.7	3.4	1.4	0.4	0.5	0.0	0.0	0.0
Yukon Gold	1.3	3.0	7.3	4.3	2.2	1.3	0.5	0.3	2.5	5.0	0.0

<sup>1</sup>See the standard NE184 rating system for a key to these ratings.

<sup>2</sup>Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

**Upstate New York Table 5.** Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the medium-late maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Total		Mkt. Yield		Size Distrib. by Class <sup>1</sup>					Size Distrib. (%)			Mean Tuber		Spec. Grav.
	Yield	cwt/A	% of std	— (% of total yield) —					1 7/8	2 1/2	to 4 in.	to 4 in.	#/ft	wt(oz)	
				1	2	3	4	5							
AF1615-1	416	365	87	6	44	42	8	0	94	50	8.5	5.1	8.5	5.1	77
Atlantic (std)	472	419	100	2	29	49	15	4	94	65	7.7	6.4	7.7	6.4	87
Eva (NY103)	410	355	85	5	36	51	7	1	95	59	7.6	5.6	7.6	5.6	72
Kanona	396	317	76	5	42	46	5	2	93	51	8.1	5.1	8.1	5.1	74
Katahdin	413	344	82	5	33	48	11	3	91	58	7.7	5.6	7.7	5.6	71
Kennebec	427	322	77	2	24	50	18	6	92	68	6.4	7.0	6.4	7.0	75
Keuka Gold (NY101)	568	524	125	5	45	41	8	1	94	49	11.7	5.0	11.7	5.0	75
NY112	508	471	112	3	31	53	11	2	96	65	8.7	6.1	8.7	6.1	78
NY115	442	395	94	6	50	40	4	0	93	44	9.7	4.7	9.7	4.7	77
NY120	423	373	89	2	17	52	24	6	93	75	5.7	7.7	5.7	7.7	82
NY121	428	363	87	10	55	32	2	1	89	34	10.8	4.1	10.8	4.1	77
NY123	428	333	79	2	21	54	19	4	94	73	6.4	7.0	6.4	7.0	81
Pike	378	333	80	5	54	36	5	1	95	41	8.6	4.6	8.6	4.6	83
R17-7	453	390	83	4	36	45	11	4	92	56	8.4	5.6	8.4	5.6	65
R17-106	452	398	95	5	34	45	13	3	92	58	8.3	5.7	8.3	5.7	66
Reba	413	360	86	2	25	51	14	8	90	65	6.7	6.4	6.7	6.4	70
S14-2	413	377	90	2	32	52	11	3	95	63	6.9	6.2	6.9	6.2	79
Snowden	477	432	103	4	49	41	5	0	95	46	10.3	4.8	10.3	4.8	86
Waller-Duncan															
LSD (k=100)	39	41									0.8	0.5			3
C.V. (%)	(7)	(8)									(7)	(7)			(3)

Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

<sup>1</sup>Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 3      Maturity Ratings: Aug 25      Vine-Kill Date: Aug 25      Harvest Date: Sept 3

**Upstate New York Table 6.** Plant maturity, tuber shape and appearance, and external and internal tuber defects for the medium-late maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Plant <sup>1</sup>		External Tuber Defects (%)					Int. Tuber Defects (%) <sup>2</sup>			
	Mat. At Vinekill	Tuber Data <sup>1</sup> Shape Appear.	Total	Sun-Green	Mis-shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.	
AF1615-1	5.5	1.0	7.6	6.0	4.4	0.7	0.7	0.3	0.0	37.5	2.5
Atlantic (std)	3.8	1.0	7.0	5.6	2.6	2.1	0.5	0.3	0.0	2.5	0.0
Eva (NY103)	1.8	1.0	8.3	8.3	5.5	2.2	0.6	0.0	0.0	0.0	0.0
Kanona	3.3	1.0	6.6	12.7	9.5	2.3	0.8	0.0	2.5	2.5	0.0
Katahdin	3.6	1.0	6.8	8.2	7.3	0.7	0.2	0.0	2.5	0.0	2.5
Kennebec	1.5	4.0	5.0	16.4	5.6	4.2	6.4	0.2	2.5	0.0	5.0
Keuka Gold (NY101)	4.0	1.0	7.5	1.9	1.2	0.4	0.1	0.2	0.0	10.0	10.0
NY112	5.9	1.0	7.3	2.8	2.4	0.1	0.3	0.0	0.0	2.5	0.0
NY115	3.0	1.0	6.6	4.0	3.3	0.6	0.0	0.0	0.0	2.5	0.0
NY120	4.8	1.0	5.3	4.2	1.6	1.8	0.7	0.0	0.0	17.5	0.0
NY121	1.3	1.0	7.0	4.6	2.6	1.9	0.1	0.0	0.0	0.0	0.0
NY123	1.9	1.0	7.0	16.0	2.1	7.5	6.5	0.0	0.0	0.0	0.0
Pike	3.6	1.0	7.3	6.5	4.6	1.6	0.3	0.0	0.0	2.5	2.5
R17-7	3.1	1.0	7.9	6.2	4.2	0.6	1.4	0.0	0.0	0.0	0.0
R17-106	3.0	1.0	8.0	3.9	3.1	0.7	0.1	0.0	0.0	0.0	0.0
Reba	1.8	2.0	7.6	2.8	2.2	0.1	0.5	0.0	0.0	0.0	0.0
S14-2	2.8	2.0	6.0	3.6	2.7	0.9	0.0	0.0	2.5	7.5	0.0
Snowden	3.9	1.0	6.4	4.8	2.5	2.0	0.3	0.0	0.0	7.5	0.0

<sup>1</sup>See the standard NE184 rating system for a key to these ratings.

<sup>2</sup>Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.



Upstate New York Table 7. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the late maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Total Yield		Mkt. Yield		Size Distrib. by Class <sup>1</sup>					Size Distrib. (%)				Mean Tuber		Spec. Grav.
	cwt/A	Yield	cwt/A	% of std	— (% of total yield) —					1 7/8      2 1/2				#/ft	wt(oz)	
					1	2	3	4	5	to 4 in.	to 4 in.					
Allegany	426		339	87	3	23	45	20	10		87	65	6.5	6.9	79	
Atlantic (std)	465		392	100	3	22	54	16	4		93	71	7.1	6.8	89	
Atlantic NewLeaf	436		380	97	3	30	47	16	4		93	63	7.0	6.5	87	
B0178-34	430		368	94	4	25	53	12	6		90	65	7.1	6.3	88	
B0564-8	372		339	86	7	50	38	5	0		93	43	8.2	4.7	76	
Castile	458		332	85	3	26	37	19	15		83	56	6.7	7.2	82	
Elba	479		361	92	3	26	47	15	9		88	62	7.6	6.5	80	
Genesee	437		384	98	5	29	55	10	1		94	65	7.7	5.9	69	
Katahdin	471		393	100	5	39	46	8	2		93	54	9.1	5.4	76	
NYL235-4	531		437	111	4	39	47	8	2		94	55	10.2	5.4	80	
S111-28	433		382	97	4	39	48	7	3		93	54	7.9	5.7	90	
S197-12	373		319	81	0	11	56	27	6		94	83	4.6	8.4	83	
T43-27	438		333	85	2	11	48	24	15		83	72	5.2	8.8	75	
T44-8	394		342	87	2	17	52	24	5		93	76	5.4	7.6	84	
T45-7	422		335	86	3	29	47	17	4		93	64	6.8	6.5	73	
Waller-Duncan																
LSD (k=100)	69		75										0.86	0.7	3	
C.V. (%)	(10)		(12)										(9)	(8)	(2)	

1Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

<sup>1</sup>Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 4      Maturity Ratings: Aug 31      Vine-Kill Date: Sept 1      Harvest Date: Sept 10

**Upstate New York Table 8.** Plant maturity, tuber shape and appearance, and external and internal tuber defects for the late maturity trial grown at Freeville, New York - 1999.

Variety/Clone	Plant <sup>1</sup> Mat. At Vinekill	Tuber Data <sup>1</sup> Shape	External Tuber Defects (%)						Int. Tuber Defects (%) <sup>2</sup>			
			Appear.	Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.	
Allegany	3.5	1.0	7.3	7.9	4.9	1.9	0.9	0.2	0.0	0.0	0.0	
Atlantic (std)	3.1	1.0	7.1	8.1	3.7	2.4	1.9	0.2	0.0	0.0	0.0	
Atlantic NewLeaf	2.3	1.0	7.3	5.2	1.3	2.8	0.9	0.2	2.5	0.0	2.5	
B0178-34	2.8	3.0	6.0	4.4	2.2	0.1	2.1	0.0	0.0	22.5	5.0	
B0564-8	1.4	1.0	6.6	2.0	1.5	0.2	0.3	0.0	0.0	0.0	0.0	
Castile	2.4	6.0	6.6	10.5	7.2	2.6	0.5	0.2	0.0	0.0	0.0	
Elba	6.6	1.0	5.9	13.2	8.8	2.3	2.1	0.0	0.0	15.0	0.0	
Genesee	5.3	1.0	7.9	6.8	6.0	0.4	0.3	0.0	0.0	0.0	0.0	
Katahdin	3.1	3.0	6.1	9.4	7.7	1.0	0.7	0.0	2.5	2.5	0.0	
NYL235-4	2.1	1.0	4.1	10.8	5.2	1.8	2.4	1.4	0.0	0.0	0.0	
S111-28	1.5	1.0	5.6	5.4	1.5	3.7	0.0	0.1	0.0	2.5	0.0	
S197-12	1.0	1.0	6.3	8.2	2.1	2.1	4.1	0.0	0.0	0.0	0.0	
T43-27	4.1	3.0	7.5	6.8	1.7	1.0	4.0	0.2	2.5	0.0	0.0	
T44-8	2.9	3.0	7.6	5.8	0.6	1.7	3.0	0.5	2.5	0.0	0.0	
T45-7	2.4	1.0	7.5	13.7	2.5	3.4	7.8	0.0	0.0	7.5	0.0	

<sup>1</sup>See the standard NE184 rating system for a key to these ratings.

<sup>2</sup>Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

Upstate New York Table 9. Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the 2-replication red and purple skinned trial grown at Freeville, New York - 1999.

Variety/Clone	Total Yield cwt/A	Mkt. Yield cwt/A	% of std	Size Distrib. by Class <sup>1</sup> (% of total yield)					Size Distrib. (%)			Mean Tuber wt(oz)	Spec. Grav.
				1	2	3	4	5	1 7/8 to 4 in.	2 1/2 to 4 in.			
											#/ft		
B0811-4	213	155	39	25	75	0	0	0	75	0		8.9	2.5
B1523-4	473	409	103	6	41	36	12	5	90	49	10.1	4.9	77
Chieftain (std)	432	399	100	4	57	36	3	0	96	39	10.1	4.5	70
Dark Red Norland	364	333	83	4	51	42	3	0	96	45	7.8	4.9	63
NorDonna	418	381	96	6	66	25	3	0	94	28	10.1	4.3	73
NY118	406	361	90	7	47	42	3	0	93	45	9.4	4.5	72
Redsen	289	243	61	12	58	25	5	0	88	30	7.5	4.0	65
Super Red Norland	362	217	54	2	19	44	22	13	85	66	5.0	7.5	58
S45-5	367	259	65	8	45	36	7	4	88	43	7.8	4.9	70
S45-7	373	342	86	7	62	30	1	0	93	30	9.7	4.0	72
S48-6	453	405	101	4	42	46	6	2	94	52	8.6	5.5	63
S49-3	429	391	98	4	50	40	5	1	95	45	8.0	5.6	69
T8-3	278	192	48	31	67	2	0	0	69	2	11.3	2.6	62
T10-1	404	320	80	13	65	15	3	4	83	18	11.7	3.6	65
T10-3	313	280	70	6	57	34	2	1	93	36	7.3	4.4	66
T14-1	307	263	66	6	39	47	3	5	89	50	6.5	4.9	69
T15-2	269	243	61	8	66	24	1	0	92	25	7.0	4.0	65
T15-3	349	283	71	16	76	7	0	0	84	7	11.3	3.2	62
T17-2	341	279	70	16	64	20	0	0	84	20	9.3	3.8	66
U71-2	448	391	98	6	42	43	8	2	92	51	9.5	4.9	69
U71-5	315	246	62	2	21	48	23	6	92	71	4.5	7.3	66
U71-6	436	371	93	7	41	46	4	2	91	50	9.6	4.7	79
U72-4	381	330	83	8	47	37	7	1	91	44	8.4	4.7	69
Waller-Duncan													
LSD (k=100)	49	52									1.67	0.76	4
C.V. (%)	(7)	(9)									(10)	(9)	(3)

<sup>1</sup>Size classes: 1 = 1" to 1 7/8", 2 = 1 7/8" to 2 1/2", 3 = 2 1/2" to 3 1/4", 4 = 3 1/4" to 4", 5 = over 4"

Plant Date: May 5      Maturity Ratings: Aug 31      Vine-Kill Date: Sept 1      Harvest Date: Sept 13

Upstate New York Table 10. Plant maturity, tuber shape and appearance, and external and internal tuber defects for the 2-replication red and purple skinned trial grown at Freeville, New York - 1999.

Variety/Clone	Plant <sup>1</sup> Mat. At Vinekill	External Tuber Defects (%)						Int. Tuber Defects (%) <sup>2</sup>			
		Tuber Data <sup>1</sup>		Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.
		Shape	Appear.								
B0811-4	1.0	1.0	4.5	2.0	0.2	1.5	0.4	0.0	0.0	10.0	0.0
B1523-4	1.3	1.0	7.0	2.9	2.0	0.6	0.0	0.2	0.0	10.0	0.0
Chieftain (std)	1.0	1.0	7.0	3.4	1.6	0.7	1.1	0.0	0.0	0.0	0.0
Dark Red Norland	1.0	3.0	6.0	4.7	0.0	3.6	1.1	0.0	0.0	0.0	0.0
NorDonna	2.5	1.0	6.5	2.6	1.5	0.7	0.3	0.0	0.0	0.0	0.0
NY118	2.5	1.0	8.0	3.6	2.5	0.4	0.3	0.5	0.0	0.0	0.0
Redsen	1.0	1.0	7.0	3.5	0.3	2.9	0.1	0.1	0.0	0.0	0.0
Super Red Norland	1.0	2.0	6.3	25.0	0.4	8.7	15.9	0.0	5.0	0.0	0.0
S45-5	1.0	8.0	3.5	17.4	0.6	16.6	0.0	0.2	0.0	0.0	0.0
S45-7	1.3	6.0	7.3	1.3	0.0	1.1	0.2	0.0	0.0	0.0	0.0
S48-6	1.3	5.0	6.3	4.9	1.7	2.6	0.0	0.7	0.0	0.0	0.0
S49-3	1.0	5.0	6.0	4.1	0.9	2.9	0.2	0.0	0.0	0.0	0.0
T8-3	1.0	1.0	6.3	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0
T10-1	1.0	2.0	5.5	3.9	0.9	3.0	0.0	0.0	0.0	0.0	0.0
T10-3	1.0	2.0	6.8	3.4	0.0	2.5	0.8	0.0	0.0	0.0	0.0
T14-1	1.3	1.0	3.0	3.2	0.9	1.7	0.7	0.0	5.0	0.0	0.0
T15-2	1.0	2.0	6.8	1.5	1.2	0.0	0.3	0.0	0.0	5.0	0.0
T15-3	1.0	1.0	4.5	2.8	0.1	1.9	0.0	0.8	0.0	0.0	0.0
T17-2	1.0	8.0	6.0	2.3	0.5	1.7	0.0	0.0	0.0	0.0	0.0
U71-2	1.5	6.0	5.3	5.2	3.1	1.7	0.4	0.0	0.0	0.0	0.0
U71-5	1.5	3.0	4.5	13.6	0.0	2.7	10.9	0.0	0.0	0.0	0.0
U71-6	2.5	1.0	7.3	5.8	3.0	0.8	2.0	0.0	0.0	0.0	0.0
U72-4	2.3	2.0	7.0	4.2	0.6	3.5	0.2	0.0	0.0	0.0	0.0

<sup>1</sup>See the standard NE184 rating system for a key to these ratings.

<sup>2</sup>Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.

**Upstate New York Table 11.** Yield, marketable yield, grade size distribution, tuber number per foot and weight, and specific gravity for the russet/long tuber variety trial grown at Freeville, New York - 1999.

Variety/Clone	Total Yield cwt/A	Mkt. Yield % of cwt/A	Size Distrib. by Class <sup>1</sup> — (% of total yield) —										Size Distrib. (%)			Spec. Grav.
			1	2	3	4	5	12 oz	8 oz	4 to over	12 oz	8 oz	4 to over	Mean Tuber #/ft	wt(oz)	
A8495-1	425	283	122	19	47	26	6	2	73	34	8	8.1	5.5	77		
A81386-1	457	282	121	15	38	24	12	11	62	47	23	7.6	6.3	82		
Amey (B9922-11)	402	274	118	7	29	32	16	15	61	63	31	5.4	7.8	81		
Legend	353	255	110	6	28	33	22	11	61	66	33	4.5	8.2	76		
Russet Burbank (std)	486	232	100	26	45	20	6	3	65	29	9	10.1	5.0	82		
Russet Norkotah	389	252	108	16	38	22	15	8	61	45	23	6.6	6.1	67		
Russet Norkotah-3	449	271	117	11	29	29	16	15	58	60	31	6.5	7.2	76		
Russet Norkotah-8	500	347	149	10	29	30	20	10	59	61	30	7.1	7.3	71		
Shepody	418	244	105	9	34	28	14	15	62	57	29	5.9	7.4	83		
Waller-Duncan																
LSD (k=100)	44	51										0.9	0.63	3		
C.V. (%)	(7)	(11)										(10)	(7)	(3)		

Size classes: 1 = under 4 oz, 2 = 4 to 8 oz, 3 = 8 to 12 oz, 4 = 12 to 16 oz, 5 = over 16 oz

Plant Date: May 4      Maturity Ratings: Sept 6      Vine-Kill Date: Sept 9      Harvest Date: Sept 22

**Upstate New York Table 12.** Plant maturity, tuber shape and appearance, and external and internal tuber defects for the russet/long tuber variety trial grown at Freeville, New York - 1999

Variety/Clone	Plant <sup>1</sup> Mat. At Vinekill	Tuber Data <sup>1</sup> Shape	External Tuber Defects (%)						Int. Tuber Defects (%) <sup>2</sup>		
			Total	Sun- Green	Mis- shapen	Growth Cracks	Rot	Holl. Heart	Vasc. Disc.	Int. Nec.	
A8495-1	3.4	8.0	4.9	11.9	6.5	5.2	0.0	0.2	5.0	0.0	0.0
A81386-1	4.1	8.0	5.4	12.3	4.5	7.7	0.1	0.0	0.0	7.5	0.0
Amey (B9922-11)	1.0	8.0	7.5	9.5	1.7	2.6	5.3	0.0	7.5	2.5	0.0
Legend	3.3	8.0	7.1	11.2	1.0	1.8	8.5	0.0	0.0	2.5	2.5
Russet Burbank (std	2.9	8.0	5.1	24.1	3.7	17.7	2.7	0.0	12.5	2.5	5.0
Russet Norkotah	1.0	8.0	6.8	10.7	4.6	4.7	1.3	0.1	2.5	0.0	2.5
Russet Norkotah-3	1.9	8.0	5.8	13.8	5.4	7.7	0.6	0.2	22.5	2.5	0.0
Russet Norkotah-8	1.1	8.0	6.9	10.0	3.9	5.2	0.3	0.6	2.5	7.5	0.0
Shepody	1.1	8.0	4.4	17.5	5.5	12.0	0.0	0.0	5.0	10.0	2.5

<sup>1</sup>See the standard NE184 rating system for a key to these ratings.

<sup>2</sup>Based on a 10-tuber sample from each replication. The tubers were taken from size categories 3 and 4.



Upstate New York Table 13. Yield, marketable yield, grade size distribution, tuber number per foot and weight, percentage of external and internal defects, and specific gravity for the unreplicated Orleans County muck soil trial grown near Elba, New York - 1999.

Variety/Clone	Total Yield	Mkt. Yield			Size Distrib.			Mean Tuber		Pct. External Tuber Defects				Pct. Internal Tuber Defects			Spec. Grav.
		cwt/A	% of	std	1	2	3	#/ft	wt(oz)	SUN	KNB	GC	ROT	HH	VD	NEC	
Allegany	311	198	57	3	78	18		4.3	7.5	7	8	0	0	0	0	0	70
Andover	308	270	78	8	92	0		6.6	4.9	3	1	0	0	0	0	0	77
Castile	327	212	61	4	77	18		5.0	6.8	5	8	0	0	10	0	0	72
Chieftain	286	192	55	11	87	2		6.3	4.7	2	11	7	0	0	0	10	65
Eva (NY103)	383	312	90	11	85	5		8.6	4.7	2	1	1	0	0	0	0	72
Genesee	414	325	93	12	86	2		10.1	4.3	8	0	0	0	0	0	0	69
Katahdin (std)	416	348	100	6	94	0		9.2	4.7	8	1	1	0	30	0	10	77
Keuka Gold (NY101)	429	361	104	9	86	5		8.8	5.1	1	0	0	0	0	0	0	65
NorDonna	288	249	72	10	90	0		7.0	4.3	0	2	0	0	0	0	0	67
NY115	437	361	104	9	88	3		9.4	4.8	2	3	1	0	0	0	0	73
NY118	475	403	116	13	87	0		12.7	3.9	1	2	0	0	0	0	10	63
NY121	274	178	51	31	69	0		9.9	2.9	3	1	0	0	0	0	0	76
NY123	314	226	65	22	78	0		9.1	3.6	2	4	0	0	0	0	0	82
NYL235-4	431	241	69	5	93	1		8.3	5.4	10	9	18	0	0	0	0	65

Upstate New York Table 13. Continued.

Variety/Clone	Total Yield		Mkt. Yield		Size Distrib.			Mean Tuber		Pct. External Tuber Defects				Pct. Internal Tuber Defects				Spec. Grav.
	cwt/A	std	cwt/A	% of	1	2	3	#/ft	wt(oz)	SUN	KNB	GC	ROT	HH	VD	NEC		
Purple 5	262	199	57	16	84	0	7.0	3.9	3.9	3	1	4	0	0	0	0	0	72
Reba	450	349	100	6	86	8	7.8	6.0	6.0	5	0	1	2	10	0	0	0	68
Redsen	413	287	83	14	79	7	10.1	4.3	4.3	2	4	2	1	0	0	20	0	67
R17-7	388	244	70	5	93	2	6.8	6.0	6.0	16	4	10	0	20	0	0	0	63
R17-106	294	194	56	9	89	2	6.4	4.8	4.8	13	7	3	0	10	0	0	0	64
Saginaw Gold	275	208	60	14	86	0	7.1	4.0	4.0	1	8	0	1	0	0	0	0	75
Salem	443	353	101	4	93	3	7.1	6.5	6.5	8	5	0	0	0	0	0	0	62
Superior	385	323	93	8	91	2	8.3	4.8	4.8	4	2	1	0	0	0	0	0	75
Super Red Norland	321	266	76	8	88	4	6.6	5.1	5.1	2	1	2	0	0	0	20	0	61
Yukon Gold	414	335	96	4	87	9	6.1	7.1	7.1	4	2	0	0	0	0	0	0	72

†Size classes: 1 = under 2", 2 = 2" to 4", 3 = over 4"

NOTE: This trial was not replicated.

Plant Date: May 21

Vinekill Dates: September 15, 27

Harvest Date: October 15

Fertilizer: 1000 lb/A 12-10-24 broadcast.

One foliar application of calcium nitrate (15.5%N) at 3 qt/A made on July 27.

Vinekill: 2 applications of Diquat 1 pt/A.

Irrigation: None.

**Upstate New York Table 14.** Yield, marketable yield, grade size distribution, tuber number per foot and weight, percentage of external and internal defects, and specific gravity for the Steuben County mineral soil trial grown near Arkport, New York - 1999.

Variety/Clone	Total		Mkt. Yield		Size Distrib.			Mean Tuber		Pct. External Tuber Defects				Pct. Internal Tuber Defects			Spec. Grav.
	Yield	cwt/A	%	std	(% of tot. yld.)			#/ft	wt(oz)	SUN	KNB	GC	ROT	HH	VD	NEC	
					1	2	3										
Atlantic (std)	364	310	100	3	88	9	5.7	7.0	2	1	0	0	0	5	5	0	93
Eva (NY103)	367	332	107	3	93	4	5.9	6.9	1	1	0	0	0	0	0	0	77
Kanona	341	295	95	3	91	6	6.2	6.1	4	0	0	0	0	0	35	0	78
NY112	365	325	105	5	92	4	6.2	6.5	2	0	0	0	0	0	10	0	83
NY115	226	188	61	4	87	10	3.9	6.4	2	0	0	0	0	0	10	0	78
NY120	341	262	85	2	81	17	4.7	8.0	2	2	0	0	0	0	20	0	84
Pike	354	310	100	5	92	2	7.1	5.5	5	0	0	0	0	0	0	0	84
Reba	359	304	98	3	88	9	5.8	6.8	3	0	0	0	0	0	0	0	73
R17-7	400	326	105	4	89	8	6.9	6.4	5	2	0	0	0	0	0	0	74
R17-106	404	307	99	5	83	11	7.3	6.1	6	1	0	0	0	5	0	0	72
Snowden	352	297	96	5	92	3	7.2	5.4	7	0	0	0	0	0	45	0	89
S14-2	397	348	112	4	96	0	7.0	6.2	7	2	0	0	0	0	30	0	84
S111-28	425	385	124	3	93	3	7.9	6.0	2	0	0	0	0	0	0	0	87
S197-12	325	213	69	1	68	32	3.4	10.6	2	0	0	0	0	0	0	0	84
S300-7	331	304	98	5	94	1	6.7	5.5	2	1	0	0	0	0	0	0	82

Size classes: 1 = under 2", 2 = 2" to 4", 3 = over 4"

Size classes: 1 = under 2", 2 = 2" to 4", 3 = over 4"

NOTE: This trial had two replications, except there was only one plot of the numbered clones with "R" and "S" prefixes.

Plant Date: May 21

Vinekill Dates: September 8, 15, 22

Harvest Date: October 8

Fertilizer: 1600 lb/A 8-16-8 at planting.

Vinekill: 3 applications of Diquat 1 pt/A.

Irrigation: 2 times, a minimum of 1" per application

Upstate New York Table 15. Yield, marketable yield, grade size distribution, tuber number per foot and weight.

percentage of external and internal defects, and specific gravity for the Wyoming County mineral soil trial grown near North Java, New York - 1999.

Variety/Clone	Total Yield		Mkt. Yield					Size Distrib.					Mean Tuber		Pct. External Tuber Defects				Pct. Internal Tuber Defects				Spec. Grav.		
	cwt/A	Yield	cwt/A	% of std	(% of tot. yld.)					#/ft		wt(oz)	SUN				GC				ROT	HH		VD	NEC
					1	2	3	4	88	8	9.2		6.2	2	1	0	0	0	0	0					
Atlantic (std)	511		434	100	4	88	8	9.2	6.2	2	1	0	0	0	0	10	0	0	0	87					
Eva (NY103)	485		402	93	2	88	11	6.9	7.8	2	2	0	0	0	0	0	0	0	0	70					
Kanona	482		367	85	2	82	16	6.9	7.7	3	1	0	1	0	0	0	0	0	0	74					
NY112	681		587	135	3	90	7	10.9	6.9	3	1	0	0	0	5	0	0	0	0	79					
NY115	454		415	96	5	95	0	8.8	5.7	3	0	0	0	0	0	0	0	0	0	79					
NY120	502		412	95	2	85	13	7.0	7.9	1	2	1	0	0	25	0	0	0	0	81					
Pike	521		457	105	5	92	3	10.0	5.8	3	0	1	0	0	10	0	0	0	0	86					
Reba	502		383	88	3	81	16	7.4	7.5	4	1	0	0	0	5	0	0	0	0	70					
R17-7	613		464	107	3	84	13	9.8	6.9	5	2	1	0	0	0	0	0	0	0	63					
R17-106	590		458	105	6	86	9	10.2	6.4	7	0	0	0	0	0	0	0	0	0	65					
Snowden	605		562	130	4	95	1	10.4	6.4	2	0	0	0	0	10	0	0	0	0	88					
S14-2	495		419	97	3	91	5	8.8	6.2	5	2	0	0	0	20	0	0	0	0	82					
S111-28	421		386	89	3	95	2	7.3	6.3	1	2	0	0	0	10	0	0	0	0	89					
S197-12	469		409	94	1	89	10	5.9	8.8	0	1	1	0	0	0	0	0	0	0	85					
S300-7	389		364	84	4	96	0	8.4	5.1	1	1	0	0	0	0	0	0	0	0	82					

Size classes: 1 = under 2", 2 = 2" to 4", 3 = over 4"

NOTE: This trial had two replications, except there was only one plot of the numbered clones with "R" and "S" prefixes.  
Plant Date: May 14 Vinekill Dates: September 19, 24, 29 Harvest Date: October 12

Fertilizer: 600 lb/A 12.8-0-32-6.76S-0.07B-1.65Mg + 100 lb/A of 0-0-0-26Ca-4Mg plowed down.

1120 lb/A 8-22-7-0.12Mg-0.03B-0.1Zn applied at planting. 191 lb/A 34-0-0 sidedressed.

Vinekill: Three applications of Diquat: 1 pt/A, 1.25 pt/A, and 1.5 pt/A, respectively.

Irrigation: 4 times, minimum of 1" per application

## North Carolina

G. Craig Yencho and Mark Clough<sup>1</sup>

### Introduction:

The objective of this project to evaluate and identify superior advanced clones and new potato varieties which can be produced by potato growers in North Carolina, and the mid-Atlantic and southeastern US regions. To do this, we collaborate with several USDA/ARS and University potato breeding programs to evaluate early, advanced generation, and newly-released materials for performance in NC.

### Cooperating Breeding Projects

Dr. Dave Douches, Michigan State University, East Lansing, MI.

Dr. Kathleen Haynes, USDA/ARS, Beltsville, MD.

Dr. Richard Novy, North Dakota State University, Fargo, ND.

Dr. Robert Plaisted, Cornell University, Ithaca, NY.

Dr. Greg Porter, University of Maine, Porter Seed Farm, Orono, ME.

Dr. Al Reeves, University of Maine, Presque Isle, ME.

### Cooperating County Extension Agents:

Tom Campbell, Elizabeth City, Pasquotank Co.

Bill Jester, Kinston, Greene, Lenoir, and Wayne Co's.

Fred May, Bayboro, Pamlico Co.

Richard Rhodes, Columbia, Tyrrell Co.

### NC Research Station and On-farm Cooperator Locations:

Peanut Belt Research Station (NC Dept. of Agriculture and Consumer Sciences), Lewiston, NC (Bertie Co.).

Tidewater Research Station/Vernon G. James Research and Extension Center, (TRS/VGJREC), Plymouth, NC (Washington Co.).

Bright Farms, Weeksville, NC (Pasquotank Co.).

Cooper Farms, Gumneck, NC (Tyrrell Co.).

McCotter Farms, Vandemere, NC (Pamlico Co.).

Tull Hill Farms, Kinston, NC (Lenoir Co.).

### Industry Cooperators

Hettema Seed Potatoes, Fredericton, N.B. Canada.

Can Agrico Potato Corp, Grand Falls, N.B. Canada.

Wise Foods Inc., Berwick, PA.

## Methods

All trials were planted between February 17 and March 19, and harvested from June 10 to July 8. Growing seasons varied from 105 to 113 days dependent upon location and crop status. The trials were planted in a randomized complete block design with four replications except the unreplicated preliminary evaluation trial, which had only one plot per clone. Twenty clones were evaluated in all grower trials except the Tull Hill trial where 12 clones were evaluated. Plots consisted of 1 row with 28 hills spaced 9 inches apart. Spacing between rows was 38 inches at all sites, except PBRS which was spaced at 36 inches. Fertilizer, weed and pest control practices for on-farm trials were in accordance with those practiced by the cooperators.

The on-farm trials were dug using a single-row digger and hand harvested. They were graded using a portable Lockwood Grader which sorts to two grades: 1's ( $\geq 1\frac{1}{2}$ ""); and 2's ( $< 1\frac{1}{2}$ ""). The TRS/VGJREC and PBRS trials were dug using a 2-row John Deere potato harvester modified to dig one row at a time and graded to three classes: 1's ( $> 1\frac{7}{8}$ ""); 2's ( $> 1\frac{1}{2}$  to  $1\frac{7}{8}$ ""); and 3's ( $\leq 1\frac{1}{2}$ "). Culls were picked out and weighed separately in all trials. Each clone was evaluated for tuber quality and appearance while grading and during specific gravity measurements. A description of the rating scales used for all the traits evaluated is provided in the East Regional Report. After grading and weighing, 40 marketable tubers (10 tubers/replication) were randomly sampled from each entry. The tubers were cut and scored for the presence or absence of hollow heart, heat necrosis and any other internal defects. Subsamples of marketable tubers were also taken from each replication and bulked by entry for specific gravity readings and chipping tests. Specific gravity was determined using the weight-in-air/weight-in-water method, and chip colors and scores were provided by Wise Foods, Berwick, PA.

## Results

Eastern North Carolina's potato growing season started better than average during 1999 and many growers planted one or two weeks earlier than normal. Rainfall levels in the east were less than average at all sites from March to May. Temperatures were cooler for much of the season with hotter, drier conditions intensifying during the first part of July. Because it remained dry throughout the season, size and overall yields were down. This was especially true for the trials located at the TRS/VGJREC.

A total of 174 clones were evaluated by the program during 1999. The data for each trial are summarized in Tables 1-10. Each table has two parts, the first (a) being devoted to yield information and specific gravity readings and the second (b) providing potato plant and tuber quality parameters, and chip color

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scores. The main problems occurring this season were sun scald, and secondary sprouting. Both were probably related to the lack of adequate moisture in the soil. Both the McCotter and Hill sites had noticeably higher specific gravities compared to the other locations. This is attributed to vine killing at these sites. A brief summary of each trial follows.

### **On-Farm Trials**

#### **Bright Variety Trial (Tables 1a and 1b)**

The eight highest yielding clones ranked in decreasing order by marketable yield were R17-7, Atlantic, R17-106, Snowden, B0564-9, AF875-15, LaChipper, and B0564-8. None of these clones yielded significantly less than Atlantic which had an average marketable yield of 321 cwt/A. Marketable yields for this group ranged from 324 cwt/A to 278 cwt/A. Clones with specific gravities similar to Atlantic (1.077) were B0178-34 (258 cwt/A; 1.078) and B0564-8 (278 cwt/A; 1.075). Clones with exceptional chipping scores were: B0178-34 (2.0), B0564-8 (2.5), B0766-3 (2.5), ND2470-27 (2.5), NY115 (2.0), NY120 (2.0), and Snowden (2.0). B0564-8 had the best appearance score. In the plot as a whole, only low levels of disease were noted. However, a moderate amount of sun scald, growth cracks and secondary sprouts were noted. Atlantic had greater than 25% HN while the highest specific gravity clone in this trial, B0178-34, had only 5%.

#### **Cooper Variety Trial (Tables 2a and 2b)**

Several clones in this trial out-yielded Atlantic which produced an average marketable yield of 335 cwt/A. In order of decreasing marketable yield, these clones were: AF1569-2, AF1437-1, Superior, Keuka Gold (NY101), B0766-3, B0178-34, and R17-106. B0178-34 had the highest specific gravity at 1.076, while Atlantic was 1.072. Both of these clones had 3 out of 40 tubers with heat necrosis, but the severity in Atlantic was slightly greater. Clones with exceptional chipping scores were: AF1668-60, B0178-34, B0564-8, ND2470-27, NY112, and Snowden. Most clones in this trial were rated as good in appearance, but two (B0564-8 and R17-7) were rated exceptional.

#### **McCotter Variety Trial (Tables 3a and 3b)**

The five highest yielding clones in order of decreasing marketable yield were: AF875-15, AF1437-1, Snowden, B0564-9, and NY112. In this trial the best chippers were: Atlantic (2.5), B0178-34 (2.5), B0564-9 (2.5), B1415-7 (2.5), NY112 (2.0), and Snowden (2.0). B0564-8 and B0564-9 had the best tuber appearance scores. Atlantic had the highest specific gravity at 1.094 and the next closest was B0564-9 at 1.092. The gravities at this site were higher due to vine killing prior to harvest.

#### **Tull Hill Farms Red Variety Trial (Tables 4a and 4b)**

This is our grower-managed red variety trial. Irrigation was applied as needed and the trial was vine-killed 5 days before harvest. Red LaSoda, Chieftain, Red Gold, and NorDonna were the top yielding clones. In terms of appearance NorDonna, Red Cloud, and ND3574-5R were exceptional. Cherry Red was also attractive and well yielding. ND5084-3R was an exceptionally large, round clone. However, excessive skinning and air cracking may limit its acceptance.

### **Research Station Trials**

All of the trials at the TRS/VGJREC were severely moisture stressed as is evidenced by the low yields and low water deficit (-5.8" to May). Our PBRS trial was conducted in sandy soils and under irrigation so it did not suffer the same deficiency as those at the TRS.

#### **VGJREC/TRS Round White Trial (Tables 5a and 5b)**

The top performing clones in this trial were: Atlantic, B1240-1, B1415-7, B1591-1, and S195-6. B1591-1 (109% of Atlantic) had the highest gravity at 1.088 and no internal defects. Atlantic had a gravity of 1.083 and over 21% HN. S195-6 was the highest yielding variety at 223 cwt/A but it didn't chip and its appearance was poor. LaChipper, a popular variety in Florida, had many misshapen tubers with deep eyes. While eight varieties had overall appearance scores of 7 or better, only B1065-51 had a score of 8. This clone yielded 92% of Atlantic, was earlier, and produced attractive netted tubers with no internal defects that chipped one point better than Atlantic. S28-2 was the only yellow-fleshed clone in this trial. Its yield was equivalent to that of Atlantic and specific gravity was 1.075.

#### **PBRS Trial (Tables 6a and 6b)**

Seven of the 27 clones evaluated were yellow-fleshed. The five highest yielding varieties in order of marketable yield were: Snowden, R17-7, MSE048-2Y, Atlantic, and NY120. Atlantic had the highest gravity at 1.075, while MSA091-1, MSB073-2, MSNT-1, and NY123 had gravities of roughly 1.071. None of the samples taken from this trial chipped well, but the best chippers were Superior and NY120 with scores of 3 compared to Atlantic with 4. The only variety to exceed an overall appearance rating of 7 was MSE149-5Y with a rating of 8. However, ten others received a rating of 7.

#### **Unreplicated Trial (Tables 7a and 7b)**

This trial is designed to allow a first look at varieties produced by other institutions. Those clones with promising attributes such as high yield, exceptional appearance or high disease resistance will then be evaluated the following year in a replicated trial.



### **VGJREC/TRS NE-184 Trials**

Sixteen round-white, eleven red and nine russet clones were evaluated in three replicated yield trials as part of the Northeast Regional (NE-184) Potato Variety Trials Project during 1999. The results of these trials are tabulated and summarized in the East Regional Report.

In the NE-184 Round White Trial, 14 out of 16 total entries represented official NE-184 clones. The five highest yielding clones in terms of marketable yield were: Atlantic, Kennebec, Keuka Gold (NY101), NY112, and Snowden. Only three varieties (Atlantic, B0766-3, and Snowden) were assigned overall appearance scores of seven. The two highest yielding clones (Keuka Gold and NY112) were fairly attractive and chipped better than Atlantic. A potential problem with Keuka Gold (NY101) is that this clone expressed heat necrosis in 20% of the sampled tubers with a heat necrosis severity score of 7. B1450-10 (not an official NE184 entry) had the highest specific gravity at 1.080, compared to Atlantic and Snowden at 1.078. Atlantic had a 45% incidence of heat necrosis with a mean severity score of 7.

In the NE-184 Red Trial, only three out of 11 total entries represented official NE-184 clones. The four highest yielding red clones in terms of marketable yield were: B0852-7, Chieftain (NE-184 entry), ND5084-3R, and Red LaSoda. All clones in this trial received appearance scores between 5 and 7. Of the eleven varieties, six had a score of 7. These were: B0811-4, B1145-2, Cherry Red, ND5084-3R, NorDonna (NE-184 entry), and Red Gold. Chieftain had a slight heat necrosis problem. ND5084-3R was the highest yielding clone in the trial. As in our Tull Hill Farm's Red Trial, it produced exceptionally round tubers though not as large. B0811-4 and B1145-2 were two small specialty type clones which were attractive. Both had relatively high gravities.

In the NE-184 Russet Trial, four out of nine total entries represented official NE-184 clones. B1409-2 was the highest yielding clone at 174 cwt /A marketable yield. B9922-11 had the highest specific gravity reading at 1.081. Unfortunately, it also had a considerable amount of heat necrosis. The only russet in this trial to have an appearance rating better than 5 was B1463-1, which was assigned a 7. Every clone in this trial had a considerable number of misshapen culls.

### **Overall Summary**

The round white clones from the USDA with the most potential are: B0564-8, B0564-9, and B0178-34. All three of these clones have good gravities, low incidence of internal defects, and are generally uniform in size. Clones from the University of Maine with the most promise are AF875-15, AF1569-2, and

AF1437-1. Unfortunately in all three of these cases yield in relation to Atlantic was variable and the gravities were consistently lower than Atlantic. On a more positive note these clones had no incidence of heat necrosis. The clones from Cornell University with the best results in our trials were R17-7, R17-106, Keuka Gold (NY101), and NY112. Of these four, Keuka Gold (NY101) was the only yellow-flesh and it had yields above Atlantic, but it suffers from heat necrosis. The other three clones all chipped better than Atlantic though gravities in all cases were lower. Among the red varieties NorDonna, Cherry Red, and ND5084-3R have shown the most promise. All three clones typically produce large tubers. Even though ND5084-3R has a skinning problem, vine kill and earlier harvest could minimize this problem.

### **Acknowledgments**

Without the assistance of the growers, county extension agents and NCDA&CS TRS, and PBRs staff, this work could not be conducted. We are grateful for their continued support and assistance. Wise Foods, Berwick, PA is also gratefully acknowledged for conducting chip tests. Hettema Seed Potatoes, and CanAgrico provided unrestricted gifts for variety evaluation which benefited the project. Seed for the trials were provided by: Dr. Dave Douches, Michigan State University; Dr. Kathleen Haynes, USDA/ARS, Beltsville, MD; Dr. Richard Novy, North Dakota State University; Dr. Robert Plaisted, Cornell University; Dr. Greg Porter, University of Maine, Porter Seed Farm; Dr. Al Reeves, University of Maine, Aroostook Farm; and from Hettema Seed Potatoes, and CanAgrico. This project is funded in part by The North Carolina Potato Growers Association and the USDA/CSREES. Their continuing support is much appreciated.

**NORTH CAROLINA Table 1a.** Bright Farms Variety Trial, Pasquotank Co. Planted 3-8-99. Harvested 6-24-99 (108 DAP).

CLONE	Size Distribution by Class <sup>1</sup>						Specific Gravity <sup>2</sup>
	Total Yield	Marketable Yield		(% of total yield)			
	cwt/A	cwt/A	% Atl.	1's + 2's	3's	Culls	
AF1437-1	317	287	90	90.7	5.0	4.3	1.066
AF1569-2	319	268	84	84.1	6.6	9.3	1.061
AF1668-60	110	100	31	90.4	5.7	3.9	1.066
AF875-15	328	285	89	86.8	7.3	5.9	1.072
Atlantic	358	321	100	89.6	4.6	5.8	1.077
B0178-34	291	258	82	88.4	6.7	4.9	1.078
B0564-8	310	278	87	89.7	8.9	1.4	1.075
B0564-9	322	297	93	92.1	3.9	4.0	1.066
B0766-3	257	214	66	79.9	12.6	7.4	1.069
La Chipper	324	280	87	86.2	5.2	8.6	1.066
ND2470-27	307	248	78	81.1	10.0	8.9	1.069
ND3574-5R	144	114	36	79.2	14.8	6.0	1.057
NY115	166	141	44	84.5	9.4	6.1	1.066
NY120	297	262	82	88.4	5.5	6.1	1.071
R17-106	373	318	100	85.4	11.7	3.0	1.062
R17-7	375	324	101	86.4	9.3	4.3	1.058
Red Cloud	244	211	66	86.3	7.9	5.7	1.061
Red Gold	243	203	63	83.0	10.2	6.8	1.070
Snowden	339	308	97	90.9	5.4	3.7	1.069
Superior	268	239	75	89.0	6.2	4.7	1.066
Grand Mean	285	248					
CV (%)	14	16					
LSD (K=100)	52	52					

<sup>1</sup> Size classes: 1's + 2's ( $> 1\frac{1}{2}$ " ); 3's ( $\leq 1\frac{1}{2}$ " ); Culls = all defective potatoes.

<sup>2</sup> Determined by weight in air/water method.

NORTH CAROLINA Table 1b. Bright Farms Variety Trial, Pasquotank Co. Planted 3-8-99. Harvested 6-24-99 (108 DAP).

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>								Internal Defects (no./40 tubers)				Chip <sup>2</sup>		Comments <sup>3</sup>	
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR	BC	Color		
AF1437-1	5	8	9	5	6	6	6	6	3	7	7	8	6	0	0	0	0	0	5.0	SG, GC
AF1569-2	6	9	9	6	6	6	6	6	3	8	7	8	6	0	0	0	0	0	4.0	MS, L SS
AF1668-60	5	9	9	6	6	6	5	5	4	8	6	8	4	0	0	0	0	0	-	MH, L CPB, SS, SG
AF875-15	6	7	8	6	6	6	6	5	3	7	6	7	5	0	0	0	0	0	3.0	SG, SS, DAE
Atlantic	6	8	9	6	6	5	6	5	3	7	7	7	6	11	2	0	0	0	3.5	HN=8, EB, SS, RZ, SR, MS
B0178-34	7	7	9	6	6	7	6	5	4	7	7	7	5	2	0	0	0	0	2.0	HN=8, SG, RZ
B0564-8	6	8	9	5	6	5	7	8	2	8	6	8	9	0	0	0	0	0	2.5	SS
B0564-9	7	8	9	6	6	5	7	6	2	7	7	7	7	0	0	0	0	0	3.5	RZ, SS
B0766-3	6	9	9	6	6	6	7	7	2	8	7	8	5	1	2	0	0	0	2.5	HN=8, L SG, SS, MS, DAE
La Chipper	6	9	9	6	6	7	5	5	3	2	8	8	3	0	0	2	0	0	5.0	MS, DAE, lumpy
ND2470-27	7	9	9	6	6	7	6	6	4	6	6	8	4	0	0	0	0	0	2.5	CPB, GC, PTS
ND3574-5R	5	7	8	4	2	8	6	7	4	6	5	8	5	0	0	0	0	0	-	CPB, EB, GC, SR, MS, SS
NY115	5	7	9	5	6	7	6	6	3	8	7	8	7	0	0	0	0	0	2.0	MH, GC, SS, MS, YF
NY120	6	8	8	5	6	6	6	6	3	7	7	8	4	0	0	2	0	0	2.0	CPB, EB, MS, SG
R17-106	6	7	9	6	6	6	6	7	2	8	7	8	7	0	0	0	0	0	3	SS
R17-7	6	8	9	6	6	5	6	7	2	8	7	8	6	0	0	0	0	0	3.0	SS, GC, SG
Red Cloud	7	9	9	7	2	7	6	4	3	4	7	8	4	0	0	0	0	0	-	MS, SS
Red Gold	6	8	7	5	2	7	7	8	2	5	5	8	7	0	0	0	0	0	-	SR, SG
Snowden	6	9	8	6	6	5	7	7	2	5	5	8	7	0	0	1	0	0	2.0	SG, SS, GC
Superior	6	8	9	5	6	6	7	7	2	5	6	8	7	0	0	0	4	0	3.0	SS

<sup>1</sup> See NE-184 Standard Potato Rating System for key to scores in East Regional Report.

<sup>2</sup> Chip color ratings conducted by Wise Foods Inc. 1 = no defects, exceptionally bright; 2 = excellent, bright; 3 = good, light or golden; 4 = dark defects, marginal; 5 = not acceptable.

<sup>3</sup> Comment codes: BR=excessive bruising; CPB=Colorado potato beetle damage; CS=common scab; DAE=deep apical eyes; EB=early blight; ECB=European corn borer damage; EL= enlarged lenticels; FS=Fusarium wilt; HH=hollow heart; HI= herbicide injury; HN=heat necrosis; GC=growth cracks; HS=heat sprouts; LB=late blight; LHD=potato leaf hopper damage; PSTD=poor stands; MS=misshaped tubers; NN=net necrosis; PE=pink eye; PR=pink rot; PLR V=potato leaf roll virus; PTS=very pointed tubers; PS=powdery scab; PVA, PVX, PVY=potato viruses A, X, Y; RZ=Rhizoctonia; SG=secondary growth; SiSc=silver scurf; SKN=poor skin set; SS=sun scald; SR=soft rot; VD= vascular discoloration; VW=Verticillium wilt; WSTD=weak stand; WW=wire worm damage; YF=yellow flesh Note: L before code indicates high levels; Average HN Scores (HN=? ) are noted in comments (Rating Scale: 1 = very severe to 9 = absent).

**NORTH CAROLINA Table 2a. Cooper Farms Variety Trial, Tyrrell Co. Planted 3-10-99. Harvested 6-23-99 (105 DAP).**

CLONE	Total Yield		Marketable Yield		Size Dist. by Class <sup>1</sup>			Specific Gravity <sup>2</sup>
	cwt/A		cwt/A	% Atl.	(% of total yield)			
					1's + 2's	3's	Culls	
AF1437-1	391		365	116	93.6	5.1	1.2	1.052
AF1569-2	399		374	114	93.6	4.6	1.7	1.060
AF1668-60	210		196	62	93.3	4.3	2.4	1.066
AF875-15	310		275	87	88.4	9.9	1.7	1.067
Atlantic	365		335	100	91.7	6.3	2.0	1.072
B0178-34	369		345	104	93.1	6.3	0.7	1.076
B0564-8	347		315	100	91.4	7.5	1.1	1.068
B0564-9	326		300	90	92.0	4.8	3.2	1.067
B0766-3	361		341	107	94.3	5.1	0.6	1.069
La Chipper	333		297	91	89.0	9.5	1.6	1.062
ND2470-27	360		321	98	89.1	6.6	4.4	1.062
Keuka Gold (NY101)	380		349	113	91.6	4.4	4.0	1.061
Eva (NY103)	333		294	89	88.1	4.5	7.5	1.061
NY112	299		273	84	90.8	8.0	1.2	1.060
NY115	248		222	69	89.3	8.1	2.6	N/A
NY120	343		311	99	90.9	6.7	2.4	1.054
R17-106	380		327	102	84.3	13.5	2.1	1.063
R17-7	366		308	98	83.8	12.7	3.5	1.056
Snowden	314		278	84	86.4	12.2	1.4	1.064
Superior	380		356	113	93.7	5.4	0.8	1.067
Grand Mean	341		309					
CV (%)	20		22					
D-W LSD (K=100)	104.6		106.2					

1,2 See North Carolina Table 1a.

<sup>1,2</sup> See North Carolina Table 1a.

NORTH CAROLINA Table 2b. Cooper Farms Variety Trial, Tyrrell Co. Planted 3-10-99. Harvested 6-23-99 (105 DAP).

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>								Internal Defects (no./40 tubers)				Chip <sup>2</sup>		Comments <sup>3</sup>
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR	BC	Color	
AF1437-1	4	9	9	5	6	5	6	7	2	7	7	8	7	0	0	0	0	3	MS, GC
AF1569-2	6	8	8	5	6	6	6	6	2	8	7	8	7	0	0	0	0	3	PLRV?, CS, GC
AF1668-60	5	8	7	5	6	6	5	7	2	8	5	8	5	5	0	0	0	2	HN=8, WW,SS
AF875-15	6	8	6	5	6	7	6	7	2	6	3	8	5	0	0	0	0	3	EB, DAE, CS, MS
Atlantic	7	8	8	6	6	5	6	6	2	8	7	8	7	3	0	0	0	3.5	HN=8, SR, MS, SS
B0178-34	8	7	9	7	6	7	6	7	7	7	6	8	7	3	0	0	3	2	HN=7, SS
B0564-8	5	7	8	5	6	6	7	8	2	8	6	8	9	0	0	0	0	2	EB , Rz
B0564-9	6	7	7	5	6	6	7	6	2	6	7	8	7	0	1	0	0	3	CS, RZ, SR
B0766-3	6	9	8	5	6	5	6	5	2	7	7	8	7	0	0	0	0	3	DAE
La Chipper	6	8	8	5	6	7	5	7	3	5	5	8	4	0	1	0	0	3	PR, MS
ND2470-27	5	7	5	4	6	8	6	6	3	7	5	8	6	0	0	0	0	2	MS
K. Gold (NY101)	8	9	9	6	6	6	5	5	2	7	7	8	6	0	0	0	0	4	HI, L MS, CS
Eva (NY103)	6	9	9	5	6	7	6	6	4	8	7	8	7	0	1	0	0	3.5	GC, L MS, CS
NY112	7	9	9	6	6	5	6	7	4	8	7	8	7	0	0	0	0	2	MS
NY115	6	9	8	5	6	7	6	6	3	8	6	8	6	0	0	0	0	3	HI, MS
NY120	6	9	7	6	6	7	5	6	2	8	5	8	6	0	0	0	0	2.5	MS, SR
R17-106	6	8	9	5	6	7	5	5	3	8	7	8	7	0	1	0	0	3.5	EB, MS
R17-7	6	9	8	5	6	6	6	7	3	7	6	8	8	0	0	0	0	2.5	MS
Snowden	6	7	6	5	6	5	6	2	2	6	5	8	7	0	0	0	0	2	MS
Superior	6	9	9	5	6	6	6	7	2	5	6	8	7	0	0	0	0	2.5	RZ, CS

1,2,3 See North Carolina Table 1b.

NORTH CAROLINA Table 3a. McCotter Farms Variety Trial, Pamlico Co. Planted 3-4-99. Harvested 6-18-99 (106 DAP).

CLONE	Total Yield cwt/A	Size Distribution by Class <sup>1</sup>				Specific Gravity <sup>2</sup>	
		Marketable Yield		(% of total yield)			
		cwt/A	% Atl.	1's + 2's	3's		Culls
AF1437-1	250	213	138	84.7	11.8	3.5	1.067
AF875-15	265	218	137	81.8	13.3	5.0	1.085
Atlantic	207	159	100	76.9	15.5	7.6	1.094
B0178-34	210	177	112	84.2	11.7	4.0	1.083
B0564-8	222	182	114	81.1	17.5	1.4	1.090
B0564-9	242	208	129	85.2	10.7	4.1	1.092
B0766-3	202	166	107	82.3	15.7	2.0	1.089
B1415-7	195	178	113	91.1	8.2	0.6	1.075
B1491-5	212	131	86	61.0	23.1	15.9	1.076
B1493-3	177	123	75	67.1	31.3	1.5	1.089
B9922-11	200	148	97	73.9	13.1	13.1	1.077
Cherry Red	195	143	93	73.5	12.0	14.4	1.085
La Chipper	248	189	125	75.5	11.9	12.7	1.078
ND3574-5R	169	87	56	50.7	28.7	20.6	1.062
NY112	221	194	126	87.3	11.0	1.7	1.079
Red Cloud	202	169	106	83.2	7.9	8.8	1.072
Red Gold	236	171	107	72.1	23.3	4.7	1.079
Red LaSoda	248	191	122	76.4	10.0	13.6	1.070
Snowden	248	209	133	84.1	12.6	3.3	1.082
Superior	231	194	123	84.2	11.1	4.7	1.079
Grand Mean	219	172					
CV (%)	16	22					
LSD (K=100)	51	58					

1,2 See North Carolina Table 1a.

1,2 See North Carolina Table 1a.



NORTH CAROLINA Table 3b. McCotter Farms Variety Trial, Pamlico Co. Planted 3-4-99. Harvested 6-18-99 (106 DAP).

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>							Internal Defects (no./40 tubers)					Chip <sup>2</sup>		Comments <sup>3</sup>
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR	BC	Color	
AF1437-1	3	9	8	4	6	7	7	7	2	7	4	6	6	0	0	8	1	4	CPB, SR, GC
AF875-15	6	7	6	3	6	8	4	7	3	6	5	7	5	0	0	6	0	3.5	PVY, PVW, CPB, L SC, GC
Atlantic	7	8	8	4	7	6	7	7	2	7	6	7	6	1	1	3	0	2.5	SR, GC, MS, HN=8
B0178-34	9	7	8	4	6	7	6	6	3	7	5	8	6	0	0	2	0	2.5	SS
B0564-8	7	8	8	3	7	6	7	7	2	8	5	8	8	0	0	2	0	3	nice
B0564-9	8	8	8	4	7	6	7	7	2	6	7	7	8	0	0	0	0	2.5	EB, SR, SS
B0766-3	6	9	8	3	6	8	7	7	2	7	6	8	7	0	1	1	0	3	SR, EL's
B1415-7	9	9	9	5	6	7	7	3	2	7	8	8	7	0	0	3	1	2.5	L SKN
B1491-5	8	8	6	3	2	8	7	7	2	5	4	8	5	1	0	0	0	0	HN=8, YF, L MS, SS, SR
B1493-3	6	8	6	3	2	7	8	7	2	6	3	7	6	0	0	0	0	0	DAE, SiSc, YF
B9922-11	6	9	8	4	4	3	6	5	7	8	3	8	4	0	0	5	0	0	MS, GC
Cherry Red	7	9	8	4	2	7	7	7	5	6	6	5	5	0	0	1	2	0	L MS, SS, L SiSc, L MS, CS
La Chipper	7	8	7	4	9	7	5	6	2	5	6	8	4	0	0	1	0	4.5	L MS, SS
ND3574-5R	5	7	4	2	2	8	7	7	4	7	3	5	3	0	0	0	0	0	GC, SiSc, CS, MS, SR
NY112	8	9	8	5	7	6	6	4	3	8	7	9	6	0	0	2	0	2	L SKN
Red Cloud	6	9	8	3	2	7	5	5	3	7	6	6	4	0	0	2	0	0	GC, SiSc, MS
Red Gold	6	8	6	2	0	7	7	7	2	6	5	7	6	0	0	0	0	0	CS, L SR
Red LaSoda	6	8	7	4	2	8	7	7	3	2	5	6	3	0	0	3	7	0	L GC, L SR, MS, CS
Snowden	8	8	7	5	7	6	7	7	2	6	5	8	7	0	0	0	0	2	
Superior	6	8	8	3	6	7	6	7	2	5	6	6	7	0	0	0	0	3.5	CS, SR

1,2,3 See North Carolina Table 1b.

**NORTH CAROLINA Table 4a.** Tull Hill Farms Red Variety Trial, Lenior Co. Planted 2-17-99. Harvested 6-10-99 (113 DAP).

CLONE	Size Distribution by Class <sup>1</sup>						Specific Gravity
	Total Yield cwt/A	Marketable Yield		(% of total yield)			
		cwt/A	% Chieftain	1's + 2's	3's	Culls	
B1492-12	325	267	88	82.2	15.6	2.2	1.065
B1493-1	284	189	60	65.1	23.4	11.5	1.070
B1495-6	196	150	49	76.4	19.7	3.9	1.066
Cherry Red	314	275	90	87.4	8.9	3.6	1.072
Chieftain	336	309	100	91.9	6.3	1.8	1.058
ND3574-5R	256	230	76	89.8	8.4	1.8	1.057
ND5084-3R	326	276	90	84.3	3.3	12.4	1.051
NorDonna	328	296	96	90.4	8.7	0.9	1.061
Red Cloud	273	219	72	80.4	11.0	8.6	1.064
Red Gold	340	301	98	88.1	10.9	0.9	1.074
Red LaSoda	355	319	105	89.7	4.4	5.9	1.056
Superior	326	311	101	95.5	4.0	0.5	1.069
Grand Mean	305	262					
CV (%)	10	11					
LSD (K=100)	40	39					

<sup>1,2</sup> See North Carolina Table 1a.

NORTH CAROLINA Table 4b. Tull Hill Farms Red Variety Trial, Lenior Co. Planted 2-17-99. Harvested 6-10-99 (113 DAP).

CLONE	Plant Data <sup>1</sup>			Tuber Data <sup>1</sup>				Internal Defects (no./40 tubers)							Comments			
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN		HH	BC	VR
B1492-12	6	6	8	5	2	6	6	6	2	6	5	8	6	0	0	1	0	PTS
B1493-1	6	6	9	5	3	7	6	5	3	6	5	8	5	5	0	0	0	L MS, EL, GC
B1495-6	6	6	7	4	2	6	5	4	4	8	6	8	5	0	0	0	0	YF, EL, SR
Cherry Red	6	6	9	5	2	6	5	7	4	7	6	8	7	0	0	0	0	EL, MS, DAE
Chieftain	9	9	9	6	3	8	5	3	5	3	7	8	3	0	0	0	0	SR
ND3574-5R	5	5	5	4	2	8	7	6	4	8	6	8	8	0	0	0	0	
ND5084-3R	8	8	9	7	2	7	7	3	2	6	9	8	5	0	0	1	0	AC, GC, SR, SKN
NorDonna	8	8	9	6	2	8	6	8	3	6	6	8	8	1	0	0	0	
Red Cloud	9	9	9	7	2	8	6	8	3	6	6	7	8	0	0	0	0	MS, EL, GC, SR
Red Gold	6	6	7	4	2	7	6	6	3	8	6	8	6	1	0	0	0	CS
Red LaSoda	8	8	9	5	3	8	7	5	3	2	7	7	3	0	2	2	0	EL, CS, SR
Superior	7	7	9	5	6	6	7	7	2	6	6	8	7	0	4	0	0	MS, SR

1,2,3 See North Carolina Table 1b.

**NORTH CAROLINA Table 5a. Round White Trial, VGJREC/TRS, Washington Co. Planted 3-17-99. Harvested 6-30-99 (105 DAP).**

CLONE	Total Yield		Marketable Yield		Size Distribution by Class <sup>1</sup>					Specific Gravity <sup>2</sup>
	cwt/A		cwt/A	% Atl.	1's	(% of total yield)				
						2's	3's	Culls		
AF1156-14	121		102	56	72.7	12.0	2.2	13.1	1.081	
AF1470-6	143		127	69	78.0	11.3	3.4	7.3	1.066	
AF1565-12	178		162	89	72.3	19.2	3.0	5.5	1.070	
AF1615-1	152		141	77	73.4	19.1	2.7	4.8	1.073	
AF1845-7	155		145	80	59.5	34.6	2.5	3.5	1.075	
AF1896-2	173		154	84	76.1	13.7	0.9	9.3	1.077	
AF1907-6	135		126	69	78.0	15.5	1.8	4.8	1.066	
Atlantic	192		183	100	85.2	9.1	1.0	4.8	1.083	
B1065-51	173		168	92	86.8	10.0	1.7	1.4	1.071	
B1240-1	192		189	104	91.7	7.0	0.8	0.5	1.078	
B1415-7	203		201	110	92.9	5.9	0.7	0.6	1.072	
B1591-1	204		199	109	84.8	12.8	1.4	1.1	1.088	
B1598-4	129		124	68	75.0	21.6	1.3	2.2	1.073	
B1625-8	146		144	79	79.6	18.5	1.6	0.4	1.083	
B1712-18	157		151	83	83.3	13.4	1.4	1.9	1.074	
La Chipper	157		145	80	79.3	13.0	1.3	6.4	1.072	
ND2470-27	152		145	80	64.4	31.1	3.3	1.2	1.077	
NY123	168		157	86	85.9	7.7	1.7	4.7	1.076	
S111-28	143		140	77	74.1	23.6	1.9	0.4	1.082	
S14-2	138		131	72	70.0	24.5	2.1	3.4	1.079	
S195-6	226		223	122	88.3	10.0	0.3	1.3	1.076	
S197-12	141		135	74	94.3	2.0	0.1	3.7	1.084	
S28-2	178		176	97	75.0	23.6	1.3	0.1	1.075	
S300-7	135		130	71	77.5	18.7	1.6	2.2	1.074	
S32-3	180		173	95	72.2	23.8	3.5	0.4	1.075	
S33-5	170		167	91	83.0	14.9	1.1	1.0	1.076	
Snowden	172		171	93	90.0	9.1	0.8	0.1	1.076	
Superior	146		144	79	86.7	11.9	0.8	0.6	1.075	

<sup>1</sup> Size classes: 1's (> 1 7/8"); 2's (> 1 1/2 to 1 7/8"); 3's (≤ 1 1/2"); Culls = all defective potatoes.

<sup>2</sup> Determined by weight in air/water method.

NORTH CAROLINA Table 5b. Round White Trial, VGJREC/TRS, Washington Co. Planted 3-17-99. Harvested 6-30-99 (105 DAP).

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>								Internal Defects (no./40 tubers)				Chip <sup>2</sup>		Comments <sup>3</sup>
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR	BC	Color	
AF1156-14	8	9	9	6	4	3	5	1	7	8	7	7	3	6	0	0	1	-	HN=8, MS, SiSc, Pts, SG
AF1470-6	5	9	9	4	7	7	7	7	7	8	3	4	5	1	0	0	0	-	HN=8, L RZ, GC
AF1565-12	6	8	8	4	6	7	7	5	3	8	5	7	5	2	0	0	0	-	MS, HN=8, SR
AF1615-1	8	9	9	6	8	7	5	3	2	8	5	7	4	0	0	0	0	-	MS
AF1845-7	6	9	8	5	6	6	6	5	4	8	5	5	5	1	0	0	0	-	HN=8, RZ
AF1896-2	6	8	8	5	6	6	5	7	3	8	5	8	5	4	2	0	0	2.5	HN=7, MS, SiSc, GC
AF1907-6	7	9	9	4	8	8	6	6	2	6	5	7	5	6	0	1	0	3.5	HN=7, RZ
Atlantic	8	9	9	5	6	5	6	5	2	7	7	7	7	8	0	0	0	4.5	HN=6, EB, MS, RZ, SR, SiSc
B1065-51	6	9	9	5	5	5	5	9	3	7	7	8	8	0	0	0	0	3.5	GC, RZ
B1240-1	8	9	9	7	6	6	5	4	2	8	6	7	5	1	0	0	0	3.0	HN=8, RZ, GC
B1415-7	9	9	9	7	6	5	7	3	2	8	8	8	7	0	0	0	0	2.0	SiSc, SKN
B1591-1	6	9	8	5	6	5	5	7	3	7	3	7	7	0	0	0	0	-	GC, RZ, MS
B1598-4	6	8	9	4	8	6	6	7	3	7	3	7	5	0	0	0	0	-	MS, RZ
B1625-8	8	9	9	5	6	6	5	7	2	8	5	8	6	0	0	0	0	-	MS
B1712-18	7	9	9	5	6	7	6	7	3	8	5	7	5	0	0	0	0	-	MS
La Chipper	8	9	9	5	8	7	6	5	3	4	7	7	3	1	0	0	0	-	HN=8, MS, SiSc, RZ
ND2470-27	6	9	8	5	6	7	6	7	2	8	3	7	6	0	0	0	0	3.0	PLRV
NY123	9	8	9	5	8	8	5	5	3	7	5	7	4	0	0	0	1	3.5	RZ, GC, MS, DAE
SI111-28	8	7	9	5	5	5	6	5	2	6	5	8	4	0	0	0	0	2.0	RZ, SR
SI14-2	7	9	9	5	6	5	7	7	2	8	4	7	6	1	0	0	0	2.0	HN=8, RZ, MS
SI95-6	9	9	9	6	6	5	5	4	2	8	5	8	5	0	0	0	0	4.0	EB, RZ, SG, GC
SI97-12	9	9	9	5	6	5	5	6	3	8	6	7	6	0	0	0	0	3.5	RZ
S28-2	6	9	9	5	7	6	5	7	3	8	5	8	7	0	0	0	0	-	YF, GC
S300-7	6	9	8	5	8	6	5	7	2	8	5	7	5	1	0	0	0	-	HN=8, RZ
S32-3	7	9	8	5	6	6	7	6	3	7	5	8	5	1	0	0	0	-	HN=7, RZ, SiSc
S33-5	5	8	9	4	6	6	7	7	2	6	5	7	7	1	0	0	0	-	HN=8, FS, SR
Snowden	9	9	8	6	6	5	7	5	2	5	6	8	7	2	0	0	0	2.0	HN=7, RZ, SiSc, DAE
Superior	6	9	9	5	6	6	5	7	3	6	5	8	7	4	0	0	0	3.5	HN=8
1,2,3 See North Carolina Table 1b.																			

1,2,3 See North Carolina Table 1b.

**NORTH CAROLINA Table 6a.** Peanut Variety Trial, PBRS, Bertie Co. Planted 3-2-99. Harvested 6-21-99 (111 DAP).

CLONE	Total Yield		Marketable Yield		Size Distribution by Class <sup>1</sup>					Specific Gravity <sup>2</sup>
	cwt/A		cwt/A	% Atl.	1's	(% of total yield)			Culls	
						2's	3's			
AF1565-12	146		135	56	71.3	21.2	2.6		4.9	1.066
Agata	163		156	69	69.6	25.5	1.6		3.2	1.054
Arnova	276		218	93	69.0	10.0	1.3		19.7	1.048
Atlantic	249		238	100	89.0	6.4	0.9		7.5	1.075
B1065-51	208		192	80	85.2	6.5	0.9		7.3	1.061
B1415-7	185		182	78	94.0	4.2	0.2		1.6	1.065
B9922-11	175		161	68	83.0	8.9	1.0		7.0	1.067
Cherry Red	164		156	67	84.6	10.7	0.9		3.9	1.068
Estima	190		167	71	74.8	11.0	1.2		12.9	1.064
Fabula	228		206	90	81.7	5.6	0.8		12.0	1.047
La Chipper	198		189	80	87.2	8.1	0.5		4.2	1.067
Maranca	263		209	89	65.3	14.3	1.9		18.5	1.049
MSA091-1	208		190	81	80.5	10.8	0.9		7.8	1.070
MSB073-2	204		198	84	79.6	17.0	2.2		1.1	1.071
MSB106-7	241		226	96	88.5	4.8	1.0		0	1.060
MSE048-2Y	246		237	101	87.7	8.6	1.4		2.3	1.067
MSE149-5Y	208		196	83	85.7	8.9	1.2		4.3	1.062
MSG050-2	224		218	92	89.1	8.0	0.6		2.2	1.064
MSNT-1	153		149	64	77.3	19.9	1.8		1.1	1.072
NY120	242		232	99	92.7	3.1	0.7		3.5	1.067
NY123	199		187	80	85.0	9.5	1.1		4.5	1.071
Penta	221		208	87	78.5	15.4	2.6		3.5	1.061
Provento	223		196	82	65.2	22.1	3.6		9.2	1.059
R17-106	241		227	94	77.2	15.4	2.2		5.2	1.064
R17-7	254		245	104	83.9	12.3	1.1		2.7	1.062
Snowden	259		256	110	91.7	7.1	0.7		0.5	1.065
Superior	212		207	76	91.9	5.7	0.2		2.1	1.066
Grand Mean	215		201							
CV (%)	16		19							
D-W LSD (K=100)	52		63							

1,2 See North Carolina Table 5a.



NORTH CAROLINA Table 6b. Peanut Variety Trial, PBRS, Bertie Co. Planted 3-2-99. Harvested 6-21-99 (111 DAP).

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>							Internal Defects (no./40 tubers)				Chip <sup>2</sup>		Comments <sup>3</sup>	
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR	BC		Color
AF1565-12	5	8	9	4	6	6	7	6	2	7	5	8	7	0	0	0	0	3.5	SS
Agata	8	8	9	4	7	6	6	6	3	8	5	8	7	0	0	0	0	-	SS, SG, YF
Arnova	7	9	9	6	6	6	5	5	4	8	6	8	4	0	0	0	0	-	L MS, SG, YF
Atlantic	8	8	9	5	6	5	6	4	2	8	7	8	6	0	0	0	0	4.0	EB, GC, RZ, SR, SS
B1065-51	8	9	9	5	6	5	5	4	3	8	7	8	6	0	0	0	0	5.0	VW, SS, GC, MS
B1415-7	8	9	9	6	6	5	7	4	3	8	8	8	6	0	0	0	0	4.5	SS
B9922-11	8	9	9	6	4	2	5	4	6	8	3	8	4	0	0	0	0	-	L MS, GC, SS
Cherry Red	8	9	9	5	2	6	5	7	3	7	5	8	5	0	0	0	0	-	MS, GC, SS, EL
Estima	7	9	9	5	9	6	5	5	4	8	6	6	6	0	0	0	0	-	L CS, MS, GC, YF
Fabula	8	9	9	6	9	6	6	5	3	7	7	8	7	0	0	0	0	-	VW, L SG, MS
La Chipper	7	9	9	5	6	6	6	4	2	7	5	7	5	0	0	0	0	-	MS, SS
Maranca	9	9	9	6	6	6	5	5	4	8	6	8	7	0	0	0	0	-	L SG, YF, MS, SS
MSA091-1	9	9	9	6	6	6	6	5	3	7	6	8	5	0	0	0	0	4.0	L PTS
MSB073-2	6	8	9	6	6	5	7	7	2	7	5	8	7	0	0	0	0	3.5	SG, SS
MSB106-7	6	8	9	5	6	6	5	4	5	8	7	8	6	1	0	0	0	5.0	SG, SS
MSE048-2Y	9	9	9	7	7	6	7	4	2	7	6	8	7	0	0	0	0	-	MS, SS, YF
MSE149-5Y	7	8	9	5	6	6	7	7	2	8	6	8	8	0	0	0	0	-	HI, MS, YF
MSG050-2	7	6	9	5	6	5	3	5	2	8	5	8	3	0	0	0	0	5.0	VW, MS, Flat
MSNT-1	7	8	9	5	6	5	7	7	1	7	3	8	5	0	0	0	0	4.0	MS, SS
NY120	9	9	9	7	6	5	5	6	3	7	8	8	6	0	0	0	0	3.0	MS, SS
NY123	8	9	9	6	6	6	5	5	7	6	7	8	6	0	0	0	1	4.0	GC, DAE, PTS
Penta	9	9	9	6	7	5	5	7	2	8	4	8	-	0	0	0	0	-	SG, SS, DAE
Provento	8	9	9	6	7	6	6	7	4	8	3	8	5	0	0	0	0	-	L MS, L SG, YF
R17-106	7	8	9	5	6	5	6	7	3	8	7	8	7	0	0	0	0	3.5	SS, SG
R17-7	6	6	9	6	6	5	6	7	2	7	7	8	7	0	0	0	0	3.0	DAE
Snowden	9	9	8	7	6	5	6	6	2	6	6	8	7	0	0	0	0	3.5	
Superior	7	9	9	5	6	5	5	7	3	6	5	8	7	0	0	0	0	3.0	MS

1,2,3 See North Carolina Table 1b.

**NORTH CAROLINA Table 7a. Unreplicated Trial, VGJREC/ TRS, Washington Co. Planted 3-17-99, Harvested 6-30-99 (105 DAP).**

CLONE	Total Yield		Marketable Yield		Size Distribution by Class <sup>1</sup>				Specific Gravity <sup>2</sup>
	cwt/A	% Atl.	cwt/A	% Atl.	(% of total yield)				
					1's	2's	3's	Culls	
AF1455-20	207		195	91	25.6	4.3	1.3	0.6	1.085
AF1846-2	198		178	83	21.5	5.7	1.5	1.6	1.070
AF1935-6	170		155	72	15.3	8.4	2.3	0.0	1.078
AF1937-4	169		159	74	20.1	4.3	1.6	0.0	1.073
AF1938-3	217		210	98	29.0	3.2	0.3	0.8	1.075
AF1949-1	183		175	82	20.3	6.5	0.7	0.5	1.080
AF1950-1	203		196	91	27.0	3.0	0.2	1.0	1.079
AF2004-2	116		109	51	9.3	7.3	0.4	0.9	1.082
AF2015-16	186		182	85	25.9	2.0	0.4	0.3	1.074
AF2032-1	141		132	62	13.4	6.8	1.3	0.0	1.083
ARS-W95.6498-1	107		89	41	4.0	9.6	2.8	0.0	1.075
ARS-W95.6498-5	198		188	88	22.4	6.4	1.6	0.0	1.073
ARS-W95.6500-3	171		157	73	15.1	9.0	2.1	0.0	1.086
ARS-W95.6527-1	232		230	107	30.6	4.6	0.4	0.0	1.080
ARS-W95.6543-2	165		161	75	18.4	6.2	0.5	0.2	1.075
ARS-W95.6543-3	187		185	86	21.5	6.8	0.4	0.0	1.084
ARS-W95.6553-1	175		165	77	15.8	9.5	1.5	0.0	1.077
ARS-W95.6557-3	216		210	98	25.7	6.5	0.9	0.0	1.069
ARS-W95.6563-1	150		140	65	14.9	6.5	1.6	0.0	1.078
SC8801-2	252		245	114	33.7	3.8	0.5	0.6	1.079
Atlantic	223		215	100	57.2	4.3	0.6	0.7	1.074
B1102-3	120		86	40	6.0	7.1	5.2	0.0	1.074
B1316-5	234		229	107	31.4	3.7	0.8	0.0	1.086
B1322-13	136		129	60	10.7	9.1	1.1	0.0	1.074
B1322-19	164		153	71	18.5	4.9	1.7	0.0	1.077
B1327-6	178		174	81	23.0	3.7	0.6	0.0	1.067
B1337-13	77		70	33	3.4	7.4	1.1	0.0	1.081
B1339-2	130		115	54	9.9	7.7	2.3	0.0	1.090
B1497-22	189		187	87	25.1	3.6	0.3	0.0	1.077
B1497-33	130		119	56	12.4	5.9	0.8	0.8	1.074
B1521-2	98		91	42	4.8	9.1	1.1	0.0	1.074
B1523-4	162		147	69	15.0	7.5	2.3	0.0	1.070
B1526-1	101		88	41	7.9	5.6	1.9	0.2	1.071
B1624-22	176		168	78	18.1	7.6	0.8	0.5	1.071
B1649-8	89		79	37	6.8	5.3	1.6	0.0	1.077

NORTH CAROLINA Table 7a. Continued.

CLONE	Total Yield		Marketable Yield		Size Distribution by Class <sup>1</sup>				Specific Gravity <sup>2</sup>
	cwt/A	% Atl.	cwt/A	% Atl.	1's	2's	3's	Culls	
B1709-6	160		154	72	18.6	5.0	1.0	0.0	1.073
B1711-8	138		133	62	16.6	3.8	0.3	0.6	1.070
B1714-2	150		147	69	20.1	2.4	0.1	0.3	1.074
B1722-5	223		220	102	32.3	1.4	0.2	0.4	1.068
B1749-15	180		175	81	25.5	1.3	0.1	0.8	1.070
B1752-5	159		145	67	18.5	3.7	1.5	0.7	1.076
B1758-3	205		195	91	24.7	5.2	1.3	0.2	1.068
B1758-4	211		198	92	24.3	6.1	1.6	0.4	1.070
B1763-4	148		140	65	13.4	8.1	1.3	0.0	1.071
B1870-17	234		224	104	31.1	3.2	1.1	0.6	1.064
B1873-4	244		228	106	26.9	8.0	1.8	0.6	1.073
B1873-6	140		124	58	13.4	5.6	2.1	0.4	1.079
B1874-1	148		145	67	18.4	3.7	0.6	0.0	1.069
B1876-10	128		128	59	16.8	2.7	0.1	0.0	1.063
B1880-4	143		138	64	15.8	5.3	0.4	0.4	1.074
B1884-9	166		158	73	22.2	1.9	0.4	0.9	1.075
B1899-8	158		150	70	18.0	5.0	0.7	0.5	1.062
B1899-9	204		199	93	26.8	3.6	0.0	0.9	1.070
BARS-W95-498-5	109		100	47	9.8	5.5	1.4	0.0	1.062
BARS-W95-502-1	90		80	37	8.1	4.2	1.5	0.0	1.078
BD113-3	20		0	0			3.1		1.084
Rideau	109		106	49	12.4	3.9	0.6	0.0	1.071
Saginaw Gold	166		161	75	18.6	6.0	0.3	0.6	1.066
ND5002-3R	122		116	54	13.0	4.8	0.7	0.3	1.074
ND5256-7R	89		79	37	4.1	8.0	1.6	0.0	1.067
ND5775-3	166		150	70	15.8	7.2	1.9	0.7	1.067
ND5822C-7	127		125	58	15.4	3.7	0.5	0.0	1.074
Snowden	190		174	81	22.4	4.3	1.4	1.1	1.052
Superior	171		168	78	22.6	3.2	0.4	0.0	1.076
L235-4	163		156	73	19.6	4.3	0.5	0.7	1.069
Q174-2	207		198	92	27.0	3.3	1.1	0.3	1.072
Q244-6	188		174	81	24.3	2.3	0.6	1.6	1.071
T113-8	231		215	100	28.0	5.0	1.6	0.9	1.076
T126-11	253		238	111	34.4	2.0	0.2	2.2	1.084
T66-64	161		158	74	19.3	4.9	0.5	0.0	1.070
T67-16	161		156	73	16.6	7.3	0.9	0.0	1.070
T67-4	108		98	46	12.8	2.3	0.2	1.4	1.074

NORTH CAROLINA Table 7a. Continued.

CLONE	Total Yield cwt/A	Marketable Yield		Size Distribution by Class <sup>1</sup> (% of total yield)				Specific Gravity <sup>2</sup>
		cwt/A	% Atl.	1's	2's	3's	Culls	
T67-9	142	142	66	20.4	1.3	0.1	0.0	1.073
T70-2	148	136	63	18.3	2.6	0.2	1.7	1.061
T78-7	201	192	89	19.1	10.3	1.1	0.4	1.071
T82-2	95	83	39	8.2	4.5	1.6	0.3	1.070
T82-5	163	146	68	18.9	3.5	1.3	1.3	1.074
T83-6	132	131	61	17.9	2.3	0.1	0.0	1.075
T88-19	196	193	90	25.1	4.5	0.1	0.4	1.080
T88-4	141	135	63	16.3	4.4	0.9	0.0	1.072
T92-5	152	143	67	18.0	3.9	0.3	1.0	1.073
T2-2	239	234	109	33.4	2.4	0.5	0.4	1.082
T3-11	153	149	69	19.5	3.3	0.1	0.6	1.068
T3-5	239	237	111	35.7	0.7	0.2	0.0	1.074
T3-9	175	164	77	19.4	5.8	0.9	0.7	1.070
T4-2	179	168	78	21.2	4.5	1.8	0.0	1.075
T4-7	189	173	81	22.9	3.6	1.0	1.5	1.059
Grand Mean	166	157						

1,2 See North Carolina Table 5a.

NORTH CAROLINA Table 7b. Unreplicated Trial, VGJREC/TRS, Washington Co. Planted 3-17-99. Harvested 6-30-99 (105 DAP).

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>								Internal Defects (no./40 tubers)				Comments <sup>2</sup>	
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR		BC
AF1455-20	9	9	9	6	6	6	4	7	2	7	5	7	5	0	0	0	0	MS
AF1846-2	6	9	9	4	6	7	5	5	4	7	5	7	6	0	0	0	0	SG
AF1935-6	9	9	9	5	6	7	5	5	4	6	5	7	6	0	0	0	0	
AF1937-4	9	9	8	5	6	6	6	5	3	8	5	7	5	0	0	0	0	SKN
AF1938-3	6	9	9	5	6	6	6	7	2	8	6	8	7	0	0	0	0	SS
AF1949-1	6	9	8	5	5	5	7	5	2	6	3	7	5	0	0	0	0	SG, MS
AF1950-1	9	9	9	6	6	7	6	5	3	7	5	7	5	0	0	0	0	MS, GC
AF2004-2	6	9	9	5	6	7	5	5	7	9	6	7	7	0	0	0	0	MS
AF2015-16	6	9	9	5	6	6	5	7	4	8	7	7	7	2	0	0	0	HN=8,MS
AF2032-1	6	9	9	4	7	8	3	5	4	8	3	7	4	0	0	0	0	flat
ARS-W95.6498-1	9	8	9	5	6	6	7	6	2	6	2	7	5	10	0	0	0	HN=5, DAE, DBE
ARS-W95.6498-5	9	9	9	5	6	5	7	6	2	6	3	7	6	2	0	0	0	HN=8
ARS-W95.6500-3	9	9	9	5	6	5	7	5	2	7	3	7	5	0	0	0	0	
ARS-W95.6527-1	9	8	9	5	6	6	5	7	2	6	5	8	6	0	0	0	0	DAE
ARS-W95.6543-2	6	8	9	4	6	7	6	7	2	7	3	7	6	0	0	0	0	RZ, EB
ARS-W95.6543-3	6	9	9	5	6	6	6	7	2	8	3	7	7	0	0	0	0	
ARS-W95.6553-1	6	9	9	4	6	5	7	5	2	8	5	7	6	0	0	0	0	
ARS-W95.6557-3	6	9	8	4	6	6	6	5	3	6	6	7	5	0	0	0	0	some brows
ARS-W95.6563-1	6	9	8	4	6	7	6	7	2	8	4	8	7	0	0	0	0	SR
SC8801-2	9	8	9	4	6	6	7	5	5	6	6	8	6	0	0	0	0	RZ
Atlantic	6	9	9	5	6	5	5	6	2	7	6	8	5	0	0	0	0	
B1102-3	5	8	9	4	2	7	7	7	2	7	3	8	5	0	0	0	0	
B1316-5	9	5	9	5	8	7	5	7	4	7	7	8	6	0	0	0	0	
B1322-13	6	9	8	4	6	6	5	5	4	8	4	8	4	0	0	0	0	
B1322-19	6	6	9	5	6	6	5	6	2	7	5	8	6	0	0	0	0	
B1327-6	9	9	9	6	6	5	6	6	2	8	6	7	6	0	0	0	0	
B1337-13	6	9	9	5	8	7	7	7	2	8	3	8	7	1	0	0	0	
B1339-2	6	9	9	5	6	6	7	7	2	8	3	8	7	0	0	0	0	
B1497-22	6	8	8	4	6	7	7	7	4	6	6	8	8	0	0	0	0	YF,
B1497-33	6	6	9	4	6	6	6	7	2	7	4	8	6	1	0	0	0	HN=8, MS, YF
B1521-2	9	9	9	4	2	6	6	6	2	8	4	8	6	0	0	0	1	
B1523-4	6	9	9	4	2	5	5	5	2	7	4	7	4	0	0	0	0	RZ, GC
B1526-1	9	9	8	4	2	6	7	5	2	7	4	7	5	0	0	0	0	MS, YF
B1624-22	6	9	9	5	6	6	5	6	3	7	6	8	7	0	0	0	0	MS
B1649-8	8	9	9	5	5	4	7	5	7	8	5	8	5	1	0	0	0	HN=8
B1709-6	9	8	9	5	6	6	7	7	2	7	5	8	7	0	0	0	0	
B1711-8	9	9	8	5	6	5	6	5	4	8	5	7	5	4	0	0	0	HN=7,MS

NORTH CAROLINA Table 7b. Continued.

CLONE	Plant Data <sup>1</sup>				Tuber Data <sup>1</sup>								Internal Defects (no./40 tubers)				Comments <sup>2</sup>	
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR		BC
B1714-2	6	9	8	5	6	6	5	5	3	8	5	7	4	1	0	0	0	HN=8, MS, L RZ
B1722-5	6	8	9	4	6	6	5	7	3	7	9	8	8	2	0	0	0	HN=8, RZ, GC, DBE?, EB
B1749-15	9	9	9	5	6	6	6	4	3	7	5	7	5	0	0	0	0	GC, MS, DAE, YF
B1752-5	6	9	9	4	7	7	7	7	3	8	5	8	7	0	0	0	0	GC, MS, nice, dark YF!
B1758-3	6	7	9	5	2	6	5	5	4	7	5	7	5	0	0	0	0	some SS
B1758-4	9	9	9	4	2	7	6	6	2	6	5	8	7	0	0	0	0	MS
B1763-4	6	8	8	4	1	6	7	5	2	6	5	8	7	0	0	0	0	
B1870-17	9	9	9	5	6	6	7	7	2	8	6	8	8	0	0	0	0	SS, RZ
B1873-4	9	9	9	5	8	6	7	7	2	8	3	8	7	0	0	0	0	MS
B1873-6	9	9	9	5	6	6	7	7	2	6	3	8	7	0	0	0	0	MS
B1874-1	9	9	9	6	6	5	7	4	2	8	5	7	6	0	0	0	0	
B1876-10	6	9	9	4	8	8	7	7	2	7	5	8	7	0	0	0	0	
B1880-4	8	9	9	5	6	6	5	5	2	7	4	8	6	0	0	0	0	MS
B1884-9	9	8	9	5	6	5	6	6	2	7	5	8	7	0	0	0	0	MS, EB
B1899-8	9	7	9	5	6	8	5	4	8	8	5	7	3	2	0	0	0	HN=8, MS
B1899-9	6	9	9	5	6	7	5	3	7	8	6	7	3	0	0	0	0	SS
BARS-W95-498-5	6	9	9	5	6	6	5	3	2	7	3	7	3	0	0	0	0	EL
BARS-W95-502-1	6	8	6	4	6	7	5	6	2	6	3	7	5	1	1	0	3	
BD113-3	6	9	9	5	7	8	7	7	2	6	1	8	7	0	0	0	0	
Rideau	5	9	8	4	2	8	6	7	2	7	5	8	7	0	0	0	0	SiSc
Saginaw Gold	6	9	9	5	6	7	5	7	3	8	4	8	6	0	0	0	1	MS, YF
ND5002-3R	6	9	9	5	2	6	6	5	4	8	6	6	6	0	0	0	0	SiSc
ND5256-7R	6	8	7	4	2	7	7	5	2	7	5	7	6	0	0	0	0	SiSc
ND5775-3	6	8	8	4	8	7	6	7	2	8	4	8	7	0	0	0	0	SS
ND5822C-7	6	9	9	5	6	5	6	3	2	6	5	8	5	0	0	0	0	
Snowden	9	8	8	5	6	5	6	7	2	5	5	8	7	0	0	0	0	
Superior	6	9	9	5	6	6	6	7	3	5	5	8	6	0	0	0	0	
L235-4	9	8	9	5	6	6	6	3	3	5	5	6	3	0	0	0	0	MS, SR, RZ, EB
Q174-2	9	9	9	6	6	5	5	4	3	8	6	6	3	0	0	0	0	RZ, MS
Q244-6	9	9	9	6	6	6	5	3	3	7	6	6	3	0	0	0	0	RZ, MS
T113-8	9	7	9	5	8	7	5	5	3	7	5	7	5	0	0	0	1	MS, RZ
T126-11	9	7	9	7	8	7	5	5	3	8	7	7	5	0	0	0	0	MS
T66-64	6	9	8	5	6	6	5	5	3	7	5	8	5	0	0	0	0	
T67-16	9	9	9	5	6	6	7	5	2	7	4	8	6	0	0	0	0	
T67-4	9	8	9	4	6	7	4	4	4	5	6	7	4	0	0	0	0	MS, GC, L SR
T67-9	9	9	9	6	6	6	7	5	2	7	6	8	7	0	0	0	0	
T70-2	8	9	9	5	6	7	5	3	4	6	7	6	3	0	0	0	0	MS



NORTH CAROLINA Table 7b. Continued.

CLONE	Plant Data <sup>1</sup>					Tuber Data <sup>1</sup>							Internal Defects (no./40 tubers)				Comments <sup>2</sup>	
	TYPE	DIS	POLL	MAT	CLR	TXT	TCX	TSS	SHP	EYE	SIZE	DIS	APP	HN	HH	VR		BC
T78-7	6	9	8	5	6	7	7	7	2	9	4	8	7	0	0	0	0	MS, nice
T82-2	9	9	9	5	6	7	5	5	3	7	4	7	5	0	0	0	0	MS
T82-5	9	9	9	5	6	7	5	3	3	7	5	7	3	0	0	0	0	MS, DAE, flat
T83-6	8	9	9	5	6	7	6	6	3	8	6	8	6	0	0	0	0	
T88-19	6	9	9	5	6	6	6	5	4	8	5	7	5	0	0	0	0	MS, RZ
T88-4	6	9	9	5	6	5	5	7	2	6	4	8	7	0	0	0	0	
T92-5	9	9	9	5	6	7	5	3	3	8	4	5	3	0	0	0	0	RZ, SiSc
T2-2	9	9	8	5	6	6	6	7	4	8	6	8	8	0	0	0	0	RZ, YF
T3-11	6	8	7	5	8	8	5	7	4	9	5	8	7	0	0	0	0	RZ, GC, SS
T3-5	9	9	9	6	6	6	5	3	5	6	7	6	3	0	0	0	1	SR
T3-9	9	9	9	5	8	7	6	7	3	8	5	8	7	0	0	0	0	MS
T4-2	6	9	9	5	6	6	7	4	2	8	5	7	6	0	0	0	0	
T4-7	6	9	8	5	6	7	5	7	2	7	5	8	7	0	0	0	0	GC, SS

1,2,3 See North Carolina Table 1b.

## OHIO

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### Summary

Ohio cooperates with the USDA and breeders in six states and Canada in evaluating varieties and experimental lines of fresh and processing potatoes. In 1999, we evaluated a total of 173 varieties and experimental lines (Table 1) from nine breeding programs. Entries were placed into one of three experiments completed at the Ohio Agricultural Research and Development Center (OARDC) in Wooster, OH; the Observation Trials, North Central Trial, or Northeast Trial. Results of the North Central and Northeast Trial are reported elsewhere in this report. The trials were designed to evaluate the growth and market traits of each entry when grown under non-irrigated conditions in Ohio. The fact that the trials at the OARDC are not irrigated tends to affect the performance of individual entries.

A portion of Ohio's potato crop is sold to potato chip manufacturers. Therefore, as in past years, the chipping characteristics of entries were evaluated. In 1999, chipping characteristics were evaluated in all entries in the North Central Trial, Northeast Trial and promising entries in the Observation Trials.

Tuber cooking quality impacts the market acceptance of a potato variety. Therefore, cooking and taste tests were completed on nineteen entries in 1999. Until 1996, the quality attributes that consumers report after potatoes have been prepared as boiled, mashed, baked or fried for home or commercial use had not been tested in entries in the germplasm trials. In 1996, we developed basic parameters for each preparation method. Since then, we have improved our evaluation techniques and reporting format.

### Planting

Seed potatoes were cut and treated with Mancozeb and then cured and stored under recommended temperature and humidity conditions at the OARDC. Table 2 contains information on

cultural, nutrient, and pest management practices. Table 3 contains pre-plant soil analysis results. Soil type was a well-drained Wooster silt loam. All entries in the North Central and Northeast Trials were replicated three times. Entries in the Observation Trials were replicated once or twice depending on seed availability. Plant stands were recorded.

### Field Observations

The season was characterized by above average temperatures and below average rainfall (Table 4). Climatic conditions likely reduced total and marketable yields of many entries, especially those entering drought-sensitive periods in tuber development in mid-June or completing tuber development in September.

Whole plots were harvested September 22-23. At harvest, observations were taken on tuber characteristics and total plot tuber weight was recorded. Observations included tuber shape, color, surface texture, eye depth, general appearance, and uniformity. These observations, along with yield data, determined which entries from the Observation Trials were included in chip and cooking quality evaluations and which may be evaluated in 2000. A 15-20 lb. sample from each entry in the North Central and Northeast Trials and from promising entries in the Observation Trials were saved for chipping. In addition, 30-40 lb. samples were graded for size on October 26. At grading, 10 randomly selected tubers from each replicate were examined for hollow heart and other internal defects. Scab and external defects were rated in a second random sample of 20 tubers.

### Chipping Evaluation

Samples were transferred to the OSU Food Industries Center on October 11 and placed in refrigerated storage (55°F). Samples were removed from storage on November 5 and held under ambient conditions (approx. 70°F) for one week. Chipping quality was assessed on November 12.

For chipping quality evaluation, 4-5 randomly selected tubers were placed in an abrasive peeler and sliced to an approximate thickness of 0.063 inches. Raw slices were rinsed in cold water and then fried in a continuous fryer containing clear liquid shortening (soybean oil) maintained at 185°C (355°F). After frying, a representative sample was taken for visual color evaluation by the standards contained in the manual published by the SFA by which chips light in

color are scored "1" and very dark chips are scored "5". Chip color was also measured with an Agtron Electronic Model M-350. Samples were also evaluated for blistering. The percentage of chips with blister(s) greater than 1 cm (0.39in.) was recorded.

### **Consumer Cooking Evaluation**

Tubers from nineteen entries were evaluated after four preparation methods. Each cooking method required specific procedures which are described below.

**Boiling:** Potatoes were peeled in an abrasive peeler for three minutes, hand trimmed where necessary and diced so that uniform sizes could be obtained for cooking. The diced potatoes were held in cold water until placed in a boil-in bag pouch with water and baked for thirty minutes. For the size of our dices, this gave an adequate cook. Cooking was accomplished in steam jacketed kettles where water was kept at a low, rolling boil throughout the thirty minute cook. After cooking, the potatoes were allowed to drain and placed on grading trays for evaluation.

**Mashing:** Potatoes were prepared as for boiled potatoes and then transferred to a mixing bowl and mixed with a home hand-held mixer. Mixing was started at slow speed, increased to medium speed and then finally given a high speed whip. Mixing time was about 30 seconds for each test. No ingredients were added.

**Baking:** The unpeeled potatoes were selected for uniformity of size, approximately 2.5-3" in diameter, washed and placed on metal cooking sheets. Potatoes were then placed in a pre-heated 350°F oven and cooked for one hour.

**Frying:** Potatoes were peeled in an abrasive peeler for three minutes to remove the majority of peel so that only minor hand trimming was necessary. The potatoes were sliced to a thickness of 1/8" in a Hobart slicer and deposited directly into water. The sliced potatoes were parboiled for 20 minutes prior to frying. Frying was done on an open grill with a temperature of approximately 350°F. A heavy coating of oil was applied to the grill and 18-20 potato slices were added. The slices were turned to coat them with oil, pulled into a pile and cooked under an aluminum cap for fifteen minutes. After the first five and second five minute cooking intervals, the potatoes were turned to obtain uniform cooking and color development and then recovered for evaluation.

Evaluation was principally subjective with the exception of specific gravity measurements. A scale of 1-5 was used to evaluate each quality attribute, with 1 being good and 5 being undesirable. On these scales, 3 was an average grade. In addition, descriptive comments were made for most observations.

**Ohio Table1.** List of varieties and experimental lines planted in the 1999 Ohio Potato Germplasm Trials at the OARDC in Wooster, OH.

Single Rep Observation Trial		Double Rep Observation Trial	North Central Trial
B1870-17	AF1896-2	B1818-5	Atlantic
B1871-1	AF1907-6	B1829-5	FV 8957-10
B1871-7	AF1921-4	B0811-4	FV9649-6
B1873-4	AF1921-9	B0852-7	MN 16153
B1876-2	AF1937-4	B0967-11	MN 16966
B1876-7	AF1938-3	B0984-1	MN 17922
B1878-7	AF1950-1	B1102-3	MN 1871 Russ
B1880-4	AF1951-1	B1145-2	MSA 091-1
B1899-8	AF1953-1	B1240-1	MSA 107-1
B1899-9	AF1991-2	B1409-2	MSE 018-1
BARS-W95-498-5	AF2004-2	B1415-7	MSE 263-10
BARS-W95-500-2	AF2005-3	B1425-9	ND 2470-27
B0852-7	AF2018-4	B1440-18	ND 3574-5R
B1649-8	AF2032-3	B1491-5	ND 4093-4
B1339-2	AF2048-3	B1492-12	ND 5084-3R
AF1156-14	ARS-W95-6498-1	B1493-1	ND 2937-3
AF1437-1	ARS-W95-6498-2	B1493-3	NorValley
AF1455-20	ARS-W95-6498-5	B1495-6	Red Norland
AF1921-5	ARS-W95-6500-3	B1591-1	Red Pontiac
AF1949-1	ARSW95-6527-1	B1598-4	Russet Burbank
AF2001-4	ARS-W95-6543-2	B1521-2	Russet Norkotah
AF2004-3	ARS-W95-6543-3	B1526-1	Snowden
AF2015-14	ARS-W95-6545-1	Cherry Red	W 1148-R
AF2015-16	ARS-W95-6545-3	Norland	W1348 Rus
AF2031-2	ARS-W95-6553-1	Redsen	W1355-1
AF2032-1	ARS-W95-6557-3	Super Red Norland	WIS 75-30
AF2047-2	ARS-W95-6558-2	AF1424-7	
AF1569-2	ARS-W95-6563-1	AF1816-1	
AF1668-60	ARS-W95-6645-2	AF1938-2	
AF1700-11	ARS-W95-672-1	CF 7523-1	
AF1753-12	Kennebec	Maranca	
AF1753-16	SC8801-2	NY 112	
AF1758-7	T2-2	NY 120	
AF1763-2	T3-11	NY115	
AF1766-2	T3-5	NY121	
AF1771-2	T3-9	Provento	
AF1773-1	T4-2	Ptarmigon	
AF1775-2	T4-7	R17-106	
AF1786-3		R17-7	
AF1786-7		Ruby Gold	
AF1808-18		S14-2	
AF1845-6		S28-2	
AF1845-7		S32-3	
AF1846-2		S33-5	
AF1856-1		S300-7	
AF1857-2		Superior Bt	
			Northeast Trial
			AF1437-1
			AF1565-12
			Atlantic
			AF1615-1
			B1240-1
			B0766-3
			Itasca
			Katahdin
			Kennebec
			Nordonna
			Norland
			NY 1C3
			NY 115
			NY 112
			Snowden
			Superior
			Yukon Gold

**Ohio Table 2.** Cultural, nutrient, and pest management practices for the Ohio Potato Germplasm Trials completed at the OARDC in Wooster, OH in 1999.

Date Planted	May 17
Date Harvested	September 22-23
1998 Crop	Wheat
Cover Crop	Winter Rye
Fertilizer	600 lb 10-20-20 (disk) 600 lb 10-20-20 (planting)
Herbicide	Sencor/Dual
Spacing Between Hill x Row	12" x 36"
Plot Size	3' x 30'
Soil Conditions at Planting	Dry
Irrigation (inches)	None
Sprays Applied:	
May 20	1. Metolachlor 2. Sencor
June 18	1. Pencozeb 2. Kocide
July 3	1. Ridomil
July 18	1. Thiodan 2. Bravo
July 30	1. Bravo 2. Thiodan
August 15	1. Pencozeb 2. Thiodan
August 31	1. Dessicate II
June 11	1. Pencozeb
June 24	1. Thiodan 2. Pencozeb
July 8	1. Thiodan 2. Pencozeb
July 23	1. Pencozeb 2. Thiodan
August 6	1. Bravo 2. Thiodan
August 27	1. Bravo

**Ohio Table 3.** Soil analyses for land used in the Ohio Potato Germplasm Trials completed at the OARDC in Wooster, OH in 1999.

Factor	Level
pH	6.0
P (lb/A)	148
K (lb/A)	234
Ca (lb/A)	2000
Mg (lb/A)	582

Soil analyses conducted at Service Testing and Analytical Research (STAR) Lab at the OARDC, Wooster, OH.

**Ohio Table 4.** Seasonal and historical climatic data for the Ohio Potato Germplasm Trials completed at the OARDC in Wooster, OH in 1999.

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	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
Avg. High Temp. (F)	75	83	89	80	79
Avg. Low Temp. (F)	50	58	64	58	51
Avg. Temp. (F)	63	71	76	68	65
Normal Avg. Temp. (F)	61	68	72	70	65
1999 Total Precip. (in.)	1.67	1.03	3.49	2.18	0.29
50-year Avg. Precip. (in.)	3.91	3.96	4.07	3.65	3.10
1999 Precip. deficit (in.)					
period	2.24	2.93	0.58	1.47	2.81
cumulative	2.24	5.17	5.75	7.22	10.03

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**Ohio Table 5.** Plant stand, yield, and tuber characteristics for entries grown in the 1999 Ohio Single- or Double-Replication trials and selected for chipping quality evaluation.

Cultivar or Selection	Stand %	Plant Maturity <sup>1</sup>	Total cwt/A	US # 1 cwt/A	US # 1 %	B Size %	Cull %	Skin Color <sup>2</sup>	Skin Texture <sup>3</sup>	Tuber Shape <sup>4</sup>	Eye Depth <sup>5</sup>	Overall Appearance <sup>6</sup>
B1339-2	80	3	165	121	73	22	4	6	5	2	8	6
B1871-1	87	5	235	205	87	4	9	6	5	2	8	7
B1880-4	93	3	173	128	74	12	14	7	7	2	6	5
B1871-7	73	1	122	110	89	11	0	6	5	2	6	4
B1878-7	80	7	235	166	71	3	27	5	5	3	5	3
AF1845-6	90	7	219	154	70	1	29	7	7	4	7	7
AF1938-3	93	5	189	157	83	5	12	7	7	3	7	7
AF1773-1	73	9	199	145	73	7	20	7	7	4	5	3
AF1763-2	110	5	210	119	57	17	27	7	6	2	5	6
AF1668-60	113	5	176	151	86	4	10	5	4	3	6	3
AF1857-2	77	5	207	171	83	3	14	6	6	2	6	5
AF1766-2	90	3	166	150	90	8	2	6	5	1	5	5
AF1569-2	83	5	181	164	91	8	1	5	4	1	6	7
AF1907-6	77	5	143	77	54	8	38	7	8	1	7	8
AF 2047-2	90	3	180	132	73	1	26	7	7	3	5	5
ARS-W95-6543-3	80	7	156	89	57	9	34	6	7	2	7	5
B1491-5	70	1	123	81	66	29	5	2	7	2	6	6
REDSEN	75	4	139	91	65	1	34	3	6	3	6	6
B1415-7	78	9	227	196	87	5	9	7	7	2	7	7
B1829-5	97	6	219	167	77	19	4	7	6	1	7	8
B1492-12	80	8	285	170	60	35	5	2	7	2	6	7
R17-106	78	7	265	193	73	14	14	6	5	2	6	5
R17-7	90	7	247	188	76	13	11	7	5	2	7	6
NY115	83	5	188	148	79	10	11	7	7	2	5	6

1, 2, 3, 4, 5, 6 See NE184 rating scale.

**Ohio Table 6.** Tuber characteristics of entries grown in the 1999 Ohio Single- or Double-Replication Trials.

Cultivar or Selection	Specific Gravity	Chip Color <sup>1</sup>	Agtron <sup>2</sup>	Blisters <sup>3</sup> %	Hollow Heart <sup>4</sup>	Necrosis <sup>4</sup>	Vascular Discolor <sup>4</sup>	Defect Free <sup>4</sup>
<b>Cherry Red</b>	1.078	1.5	46.5	0	0	0	0	10
<b>B1871-1</b>	1.063	3	41.1	0	0	0	0	10
<b>B1880-4</b>	1.072	2	49.7	10	0	0	1	9
<b>B1871-7</b>	<1.06	2	42.1	20	0	0	0	5*
<b>B1878-7</b>	<1.006	1.5	49.1	0	0	1	0	9
<b>AF1845-6</b>	1.083	2	45.8	20	0	0	0	10
<b>AF1938-3</b>	1.076	2	43.4	50	0	0	0	10
<b>AF1773-1</b>	1.06	2	37.8	20	0	0	0	10
<b>AF1763-2</b>	1.06	3	36.1	20	0	0	0	10
<b>AF1668-60</b>	1.087	2	41.1	10	0	0	0	10
<b>AF1857-2</b>	1.07	2	39.8	0	0	0	0	10
<b>AF1766-2</b>	1.068	3	35.8	0	0	0	0	10
<b>AF1569-2</b>	1.071	2	45.2	30	0	0	0	10
<b>AF1907-6</b>	1.062	3	38.5	10	0	0	0	5*
<b>AF 2047-2</b>	1.072	2	39.9	10	0	0	0	5*
<b>ARS-W95-6543-3</b>	1.084	2	40.3	10	0	0	0	5*
<b>B1491-5</b>	<1.06	2	40.5	0	0	0	0	5*
<b>Redsen</b>	1.061	2	44.2	10	0	0	0	5*
<b>B1415-5</b>	1.076	2	43.9	10	0	0	0	10
<b>B1829-5</b>	1.074	2	44.1	10	0	0	0	10
<b>B1492-12</b>	1.06	2	42.6	20	0	0	0	10
<b>R17-106</b>	1.067	2	43.8	0	0	0	0	10
<b>R17-7</b>	1.066	2	38.8	10	0	0	0	10
<b>NY115</b>	1.072	2.5	41.1	10	0	0	0	10

<sup>1</sup> SFA Standard.

<sup>2</sup> Agtron 350.

<sup>3</sup> Percentage of chips that developed blisters greater than 20mm in diameter during the frying process.

<sup>4</sup> Number of tubers out of 10 tubers that contain the defect. "\*" denotes 5-tuber sample.

**Ohio Table 7.** Stand, yield, and maturity information for entries grown in the 1999 Ohio Single- or Double-Replication Trials but not selected for chipping quality evaluation.

Cultivar or Selection	Stand %	Total cwt/A	Plant Maturity <sup>1</sup>	Cultivar or Selection	Stand %	Total cwt/A	Plant Maturity	Cultivar or Selection	Stand %	Total cwt/A	Plant Maturity <sup>1</sup>
B1818-5	93	194	5	AF 2001-4	90	150	3	ARS-W95-6498-2	100	266	7
B1870-17	77	172	3	AF 2004-3	77	153	1	ARS-W95-6498-5	93	238	7
B1873-4	83	255	9	AF 2015-14	90	209	9	ARS-W95-6500-3	93	210	5
B1876-2	93	198	1	AF 2015-16	80	202	7	ARS-W95-6527-1	87	169	5
B1876-7	83	227	3	AF 2031-2	37	117	5	ARS-W95-6543-2	90	185	5
B1899-8	70	300	9	AF 2032-1	67	123	3	ARS-W95-6545-1	83	213	7
B1899-9	77	281	9	AF1424-7	88	145	5	ARS-W95-6543-3	60	138	9
BARS-W95-498-5	73	53	1	AF1700-11	27	140	9	ARS-W95-6553-1	87	167	5
BARS-W95-500-2	83	51	1	AF1753-12	87	244	7	ARS-W95-6557-3	50	190	5
B0811-4	93	67	1	AF1753-16	97	232	9	ARS-W95-6558-2	27	24	7
2084	70	190	7	AF1758-7	117	139	3	ARS-W95-6563-1	83	138	3
B0967-11	88	227	5	AF1771-2	83	229	7	ARS-W95-6645-2	67	137	5
B0984-1	90	189	7	AF1775-2	77	219	9	ARS-W95-672-1	80	282	5
B1102-3	90	102	1	AF1786-3	87	200	7	CF 7523-1	90	268	6
B1145-2	93	179	3	AF1786-7	83	178	7	Kennebec	93	182	7
B1240-1	77	265	9	AF1808-18	80	199	7	Maranca		249	7
B1409-2	70	236	7	AF1816-1	63	248	7	NY 112	83	162	1
B1425-9	88	238	5	AF1845-7	97	216	5	NY 120	93	228	7
B1440-18	78	162	5	AF1846-2	100	224	7	NY121	98	205	4
B1493-1	82	148	7	AF1856-1	80	221	7	Provento	90	285	7
B1493-3	85	157	7	AF1896-2	90	166	5	Ptarmigon	52	179	7
B1495-6	80	170	4	AF1921-4	70	180	5	Ruby Gold	97	209	4
3606	80	231	5	AF1921-9	77	166	5	S14-2	72	223	7
B1591-1	77	187	4	AF1937-4	63	133	7	S28-2	92	242	6
B1598-4	93	189	5	AF1938-3	75	160	3	S32-3	85	204	5
B1521-2	77	201	8	AF1950-1	90	251	9	S33-5	98	164	3
B1526-1	72	113	6	AF1951-1	73	304	9	SC8801-2	70	161	3
Cherry Red	82	114	2	AF1953-1	80	206	7	S300-7	83	168	6
Norland	93	172	2	AF1991-2	87	155	3	Superlor Bt	87	183	9
Super Red Norland	78	214	5	AF2004-2	83	133	1	T2-2	50	108	5
AF 1156-14	97	237	7	AF2005-2	63	217	7	T3-11	60	104	5
AF 1437-1	70	220	5	AF2018-4	73	110	1	T3-5	50	136	7
AF 1455-20	100	235	7	AF2032-3	87	167	5	T3-9	70	100	5
AF 1921-5	83	175	5	AF2048-3	60	109	5	T4-2	57	102	5
AF 1949-1	97	221	7	ARS-W95-6498-1	90	102	3				

<sup>1</sup> See NE184 rating scale.

**Ohio Table 8.** Yield and specific gravity for entries grown in the 1999 Ohio North Central Trial.

Cultivar	Average Maturity <sup>1</sup>	Average Yield cwt/A	US#1 cwt/A	US#1 %	B Size %	Culls %	SpGr.	Agtron	PCH Color chart
Atlantic	5.0	186.7	156.8	84.0	9.5	6.3	1.079	43.2	2
FV 8957-10	4.3	170.5	117.7	69.0	17.0	14.5	1.063	47.0	2
FV9649-6	1.7	108.7	75.0	69.0	15.4	15.2	< 1.060	41.6	3
MN 16153	4.3	105.5	67.5	64.0	25.5	10.7	1.070	51.1	2
MN 16966	7.7	252.8	123.9	49.0	34.5	16.3	1.067	48.8	2
MN 17922	7.0	143.3	108.9	76.0	6.5	17.5	1.066	48.0	3
MN 1871 Russ	1.7	107.0	40.6	38.0	40.2	21.8	1.063	43.6	2
MSA 091-1	7.7	171.8	110.0	64.0	16.0	12.0	1.079	40.8	2
MSA 107-1	9.0	223.0	176.1	79.0	7.8	13.8	1.064	56.0	1
MSE 018-1	8.3	207.5	149.4	72.0	16.0	12.0	1.082	39.9	2
MSE 263-10	1.7	121.5	94.8	78.0	16.6	5.4	1.066	41.9	2
ND 2470-27	7.7	233.0	156.1	67.0	20.1	12.8	1.069	45.1	2
ND 3574-5R	4.3	146.0	116.8	80.0	8.5	11.8	< 1.060	37.4	3
ND 4093-4	5.0	122.5	62.5	51.0	29.5	20.0	1.061	46.0	2
ND 5084-3R	9.0	254.4	165.4	65.0	6.8	28.6	1.059	47.5	2
ND2937-3	5.0	138.6	106.7	77.0	12.5	11.0	1.066	40.2	3
NorValley	5.0	114.7	79.1	69.0	19.0	12.3	1.069	44.7	2
Red Norland	3.7	174.4	153.5	88.0	3.5	8.3	< 1.060	41.2	3
Red Pontiac	7.0	242.2	174.4	72.0	8.9	18.8	< 1.060	41.6	3
Russet Burbank	6.3	150.8	39.2	26.0	35.0	39.3	1.061	40.9	2
Russet Norkotah	1.0	101.0	64.6	64.0	19.3	17.2	1.065	36.7	2
Snowden	8.3	223.9	176.9	79.0	11.3	10.0	1.081	45.9	2
W 1148-R	7.0	186.7	106.4	57.0	29.6	13.1	1.064	44.4	2
W1348 Rus	8.3	143.7	37.4	25.0	48.8	26.3	1.069	44.8	2
W1355-1	4.3	187.0	119.7	64.0	16.5	19.5	1.066	42.6	2
WIS 75-30	5.7	250.9	155.5	62.0	16.1	22.0	1.065	47.5	2
<b>AVERAGE</b>	5.6	172.1	112.9	64.9	18.9	16.0	1.068	44.2	2

<sup>1</sup> Plant Maturity 1=Very Early, 2=Early, 3=+, 4=Medium early, 5=Medium, 6=Medium Late, 7=+, 8=Late, 9=Very late.



Ohio Table 9. External and internal tuber traits for entries grown in the 1999 Ohio North Central Trial.

	SCAB		PERCENT EXTERNAL DEFECTS <sup>1</sup>						PERCENT INTERNAL DEFECTS <sup>5</sup>			
	Descr. <sup>2</sup>	Number <sup>3</sup>	Growth Cracks	Off Shape or 2nd Growth	Green	Rot	tubers free of Ex. defects <sup>4</sup>	Hollow Heart	Internal Necrosis	Vascular Discoloration	Normal Tubers	
Cultivar	Atlantic	0	0	12	0	0	84	0	30	0	70	
	FV 8957-10	0	0	8	32	4	64	0	0	0	100	
	FV9649-6	T-1	1	12	60	0	40	0	0	0	100	
	MN 16153	T	1	4	84	0	16	0	0	0	100	
	MN 16966	0	0	0	86	0	14	0	0	30	70	
	MN 17922	0	0	0	16	0	84	0	0	0	100	
	MN 1871 Russ	0	0	4	100	0	0	0	0	0	100	
	MSA 091-1	0	0	4	56	0	44	0	20	0	80	
	MSA 107-1	0	0	6	56	4	40	0	0	0	100	
	MSE 018-1	0	0	0	36	4	64	10	0	0	90	
	MSE 263-10	0	0	0	36	0	64	0	0	0	100	
	ND 2470-27	0	0	2	44	10	58	0	0	0	100	
	ND 3574-5R	0	0	4	28	0	72	0	0	0	100	
	ND 4093-4	T-1	1	4	64	4	44	0	0	0	100	
	ND 5084-3R	0	0	30	34	8	46	0	0	0	100	
	ND2937-3	0	0	4	28	0	68	0	20	0	80	
	NorValley	T-1	1	8	40	4	60	0	0	0	100	
	Red Norland	0	0	4	28	0	72	0	10	0	90	
	Red Pontiac	0	0	0	52	2	48	0	0	0	95	
	Russet Burbank	0	0	12	80	0	20	0	0	0	100	
Russet Norkotah	0	0	0	40	0	60	0	0	0	100		
Snowden	0	0	0	30	2	64	0	15	15	70		
W 1148-R	0	0	0	24	0	80	0	0	0	100		
W1348 Rus	0	0	0	100	4	12	0	0	0	100		
W1355-1	0	0	12	36	8	0	56	0	30	0	70	
WIS 75-30	0	0	0	98	10	0	2	0	0	0	100	

<sup>1</sup> Based on four 25-tuber samples. Percentage based on number of tubers. Scab not counted in external defects.<sup>2</sup> Area: T = Less than 1%, 1 = 1-20%, 2 = 21-40%, 3 = 41-60%, 4 = 61-80%, 5 = 81-100%.

Type: 1 = Small, superficial; 2 = larger, superficial; 3 = larger, rough pustules; 4 = Larger pustules, shallow holes; 5 = Very large pustules, deep holes.

Example: T-1 would indicate tubers had less than 1% scab with superficial lesions.

<sup>3</sup> Number of tubers with scab area rating of 5 (81%-100%). Do not count external defects.<sup>4</sup> Tubers free from external defects of any sort.<sup>5</sup> Based on 10 tuber sample.

**Ohio Table 10.** Total yield, marketable yield, percent of yield by grade size distribution and specific gravity for entries grown in the 1999 Ohio Northeast Trial.

Cultivar or Selection	Total Yield cwt/A	Marketable Yield		% of Total Yield <sup>2</sup>			Specific Gravity
		US #1 cwt/A	% of Std <sup>1</sup>	US #1 >1 7/8"	B Size	Culls	
<b>Standards</b>							
<b>Atlantic</b>	188	152		81	11	9	1.081
<b>Katahdin</b>	238	174		73	8	19	1.064
<b>Kennebec</b>	242	118		49	21	30	1.068
<b>Superior</b>	231	165		72	9	19	1.067
<b>Average</b>	<b>225</b>	<b>152</b>		<b>68</b>	<b>12</b>	<b>19</b>	
<b>Selections</b>							
<b>AF1437-1</b>	255	199	131	78	10	12	1.060
<b>AF1565-12</b>	203	150	99	74	9	17	1.074
<b>AF1615-1</b>	248	168	111	68	12	21	1.071
<b>B1240-1</b>	249	224	147	90	3	7	1.081
<b>BO 766-3</b>	221	163	107	74	7	19	1.075
<b>Itasca</b>	192	91	60	48	20	33	1.064
<b>NorDonna</b>	161	117	77	73	21	6	<1.060
<b>Norland</b>	189	152	100	81	13	7	1.063
<b>NY 103</b>	221	187	123	85	4	11	1.066
<b>NY 115</b>	175	135	89	77	11	12	1.075
<b>NY 112</b>	209	175	115	84	9	8	1.070
<b>Snowden</b>	250	182	120	73	18	9	1.077
<b>Yukon Gold</b>	218	174	114	80	8	12	1.073

<sup>1</sup> Percent of standard is based on the average % of the four standard cultivars listed.

<sup>2</sup> May not equal 100 because based on replicate average.



**Ohio Table 11.** Tuber shape and appearance, hollow heart ratings, internal necrosis ratings and chip color for entries grown in the 1999 Ohio Northeast Trial.

Cultivar or Selection	Plant Maturity <sup>1</sup>	Tuber Shape <sup>1</sup>	Appearance <sup>1</sup>	Hollow Heart <sup>2</sup>	Internal Necrosis <sup>2</sup>	Chip Color <sup>3</sup>
<b>Standards</b>						
<b>Atlantic</b>	5.7	2	3	0	4	2
<b>Katahdin</b>	8.3	3	4	0	0	2
<b>Kennebec</b>	8.3	6	2	0	0	2
<b>Superior</b>	5.0	3	5	0	0	2
<b>Selections</b>						
<b>AF1437-1</b>	4.3	2	5	0	0	2
<b>AF1565-12</b>	4.3	2	5	0	0	2
<b>AF1615-1</b>	7.0	3	4	0	0	2
<b>B1240-1</b>	9.0	2	6	0	0	3
<b>B0766-3</b>	7.7	3	5.5	0	0	2
<b>Itasca</b>	5.0	6	3	0	0	3
<b>NorDonna</b>	3.0	3	6	0	0	2
<b>Norland</b>	3.0	3	4	0	0	2
<b>NY 103</b>	4.3	2	6	0	1	2
<b>NY 115</b>	5.0	3	5	0	0	2
<b>NY 112</b>	5.0	3	4	0	0	3
<b>Snowden</b>	5.7	2	5	0	0	2
<b>Yukon Gold</b>	6.3	3	4.5	0	0	2

<sup>1</sup> See NE184 rating scale.

<sup>2</sup> Number of tubers out of 10 tubers that contain the defect.

<sup>3</sup> Snack Food Association Standard.

**Ohio Table 12.** Plant stand, percent blister, Agtron readings, and additional tuber data for entries grown in the 1999 Ohio Northeast Trial.

Cultivar or Selection	Stand %	Chip Blister <sup>1</sup> %	Agtron E-5F <sup>2</sup>	Tuber Data <sup>3</sup>		
				Skin Texture	Eye Depth	Skin Color
Standards						
Atlantic	89	10	42.9	4	5	5
Katahdin	87	30	38.8	7	5	6
Kennebec	96	10	45.5	7	6	7
Superior	87	10	45.3	5	5	6
Selections						
AF1437-1	87	0	40.1	6	7	7
AF1565-12	83	40	52.6	7	7	7
AF1615-1	88	10	41.7	6	6	7
B1240-1	68	30	37.9	6	7	6
B0766-3	84	50	48.6	6	6	7
Itasca	84	20	48.1	6	5	6
NorDonna	94	0	50.6	7	5	2
Norland	86	40	45.3	5	5	2
NY 103	77	20	47.8	6	7	6
NY 115	84	10	36.4	6	5	6
NY112	57	10	50.1	5	7	5
Snowden	94	20	46.2	4	3	5
Yukon Gold	88	0	44.9	7	6	7

<sup>1</sup> Percentage of chips that develop blisters greater than 20mm in diameter during the frying process.

<sup>2</sup> Higher readings indicate lighter chip color.

<sup>3</sup> See NE184 rating scale.

Ohio Table 13. Evaluation of potato germplasm for customer consumption.

Cultivar	Boiled			Mashed			Baked			Fried		
	Def <sup>1</sup>	Col <sup>2</sup>	Flv <sup>3</sup>	Text <sup>4</sup>	Def	Col	Flv	Text	Def	Col	Flv	Text
AF1437-1	1	1	2	1	1	1	2	1	1	2	1	1
AF1615-1	2	3	3	1	3	3	3	2	2	2	3	3
NY103	2	2	2	2	1	2	3	2	1	3	2	2
NY115	1	2	2	1	1	3	3	3	3	3	--	--
B1240-1	4	4	3	2	4	4	3	2	1	4	4	2
B1871-1	1	1	1	1	1	1	2	1	4	1	1	2
B1880-4	3	3	2	2	2	3	4	3	1	2	1	1
B1817-7	1	1	2	1	1	1	2	1	3	2	1	2
B1878-7	1	2	1	1	1	2	1	1	3	4	1	3
AF1845-6	1	1	1	2	1	1	1	3	2	2	2	2
AF1773-1	2	1	1	2	3	3	2	4	1	2	2	1
AF1763-2	1	1	1	1	1	1	1	1	1	1	1	1
AF1857-2	1	1	1	1	1	1	1	2	1	3	1	2
B1415-7	4	4	4	3	3	4	3	3	1	3	2	3
B1829-5	1	1	2	1	1	1	2	2	1	1	2	1
B1492-12	1	1	1	1	1	1	1	2	1	2	2	3
ND5084-3R	2	2	1	1	3	2	1	1	1	3	2	3
Langlade	1	1	1	1	1	1	2	2	4	1	1	3
NE 14	4	4	3	2	3	4	3	4	2	2	1	3

<sup>1</sup> Defects: 1 = no defects ..... 5 = severe defects<sup>2</sup> Color: 1 = white ..... 5 = gray, yellow<sup>3</sup> Flavor: 1 = nice ..... 5 = off flavor, objectionable<sup>4</sup> Texture: 1 = smooth ..... 5 = lumpy

## Oregon

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### INTRODUCTION:

As part of the tri-state variety development program, which includes Idaho and Washington, the Oregon breeding program focuses on development of potato clones for high yield, quality and disease resistance.

Umatilla Russet, which was officially released in 1998, has achieved a moderate level of success in the U.S. and appears to have considerable promise in non-U.S. markets. Oregon will release three varieties in 2000. AO85165-1, an Oregon selection from an Idaho cross, will be released as KLAMATH RUSSET. Klamath is a long, russeted, fresh market selection with little potential for processing because of high sugars and low starch. It yields extremely well and has excellent appearance in the Klamath Basin and other western short season areas.

Oregon will also release two red-skinned selections, WINEMA (NDO2438-6R) and MAZAMA (NDO2686-6R) in 2000. Both have good shape and color and moderate to good yields. Mazama produces a high percentage of desirable small tubers. Winema is a relatively symptomless carrier of PVY; growers using Winema are encouraged to take special precautions against the virus.

### PROCEDURES:

Commercially accepted greenhouse and field management practices were used in all instances except for late blight screening trials. Fungicides were omitted from all late blight plantings to encourage disease development.

### Seedling Tuber Production:

A total of 128,926 seedling tubers (73,000+ A's) derived from 149 Idaho ARS crosses were produced in OSU greenhouses for year 2000 field selection. A-size tubers were saved for planting at Powell Butte to continue a solid foundation for the Oregon program. More than 55,000 B's will be donated to cooperating breeding programs at North Dakota State University, Texas A and M and Washington State University.

True seeds were planted in March and plants were transplanted into artificial media in 3.5-inch square plastic pots in April. Plants were grown under low fertility to stimulate tuber development. Insects and diseases were controlled insofar as possible using accepted greenhouse methods. Tubers were harvested by hand in August and stored at 38°F for spring single-hill planting.

### Statewide Trial:

More than 60,000 seedlings from the 1998 Corvallis greenhouse crop were evaluated as single hills at Powell Butte. More than 100 semi-advanced selections were included in preliminary replicated yield trial at three sites (results available from authors) and twenty-four advanced clones were evaluated in the 4-replicate Statewide variety trial on four branch experiment stations at Hermiston, Klamath Falls, Ontario and Powell Butte. Individual plots in the statewide trial were single rows 25 feet long and typically contained 33 seed pieces each. Commercially acceptable management practices were used to grow the crop and control weeds, insects and diseases.

### Corvallis Red, Russet and Chipping Trials:

Red, russet, chipping, and specialty clones were planted on May 15 at Corvallis in randomized complete block designs with four reps in a variable soil ranging from silt loam to sandy loam. Plots were single rows 25 feet long on 34-inch centers. Seed pieces were spaced approximately 9.5 inches apart within rows. Plantings were amended with 500 lbs/acre of 15-15-15 broadcasted and incorporated before planting followed by an additional 500 lbs banded at planting. Weeds were controlled with Matrix (rimsulfuron; 0.016lb ai/A) and Prowl (pendimethalin; 1 lb ai/A) post emergence. Insects were controlled satisfactorily with Admire and Monitor according to label directions. Irrigation was applied as needed using solid-set sprinklers. Vines were killed with Diquat on September 10 and tubers were harvested on September 17.

### Late Blight Screening:

Late blight trials were planted at Corvallis on June 4 and 5 in order to insure continued foliar health late in the season when late blight pressure typically peaks in the Willamette Valley. Trials included: 42 advanced tri-state/western regional selections and named varieties in 4-rep (15 hills/plot) trials; 50 clones in 2-rep, 12hills/plot trials; and 325 early selections in a 4-hill/plot single rep



planting.

Entries in the 12-hill trial were provided by ARS cooperators at Prosser, Washington. Materials for the 4-hill selections were survivors of 1998 single-hill plantings at Corvallis plus clones provided by ARS workers at Aberdeen, Idaho.

Except for weed control, all pesticides were omitted in blight trials. Additional irrigation was applied in late August to stimulate disease development. Plantings were also inoculated twice in late August by spraying water-based spore suspensions of U.S. 8 on a 30 x 30-foot grid throughout the field(s). Blight trials were lifted on October 4-6 and tubers were evaluated on October 8. Tubers of advanced selections were also evaluated for decay after one month of storage at room temperature.

## RESULTS AND DISCUSSION

### Statewide Trial:

In addition to the check varieties, only 6 (see bold type in Oregon Table 1) of 24 entries were saved for further evaluation. Of these, the long russet multipurpose clone AO87277-6 will be entered in the 2000 National Trial conducted in a number of regions. AO87277-6 has shown good U.S. No. 1 yields and fry color from most locations. It has looked especially attractive on heavy soils in the Willamette Valley. It is being considered for Tristate release despite a short storage dormancy.

The chipper AO91812-1 has also shown good yields and especially good fry color. It is late maturing but has performed well in short-season Willamette Valley trials. This clone is definitely worthy of further testing.

AO89128-4 is apparently a mixture of two distinct types. Efforts are underway to purify the better clone for further testing.

Other russet clones scheduled for further testing include AO90014-1, AO92007-2 and COO93031-1.

### Corvallis Russet Trial:

Nineteen advanced selections were compared to Russet Burbank, Ranger Russet and Russet Norkotah on soils ranging from silt loam to sandy loam at Corvallis (Oregon Tables 2 and 3). The first 11 entries were also tested in the 1999 Western Regional

Trial in six states.

In terms of marketable yield and overall quality, AO87277-6 was relatively superior to other selections. It produced good yields of attractive tubers of about average specific gravity for this trial. This clone is known to produce exceptionally light-colored French fries. Russet Burbank produced highest overall yields in the trial but relatively low marketable yields due to size and shape problems.

AO90014-1 showed approximately 66% virus infection, primarily PVY. It may be a hidden PVY carrier. While the upper surface of the leaves showed few visual symptoms, undersides developed typical vein burning associated with PVY. Virus levels in other entries were relatively low compared to preceding years. AO90014-1 yields were definitely reduced by the presence of PVY. It will be freed of PVY and tested further.

Many russets which perform poorly under Willamette Valley conditions produce good yields of attractive tubers elsewhere.

### Reds:

Twelve red selections and two commercial varieties (Red LaSoda and Dark Red Norland) were compared under typical Willamette Valley conditions (Oregon Tables 4 and 5). AO92657-3, NDO4588-5 and A79543-4R performed considerably better than most other entries based on yield and overall appearance. AO92657-3 tubers were slightly large, sometimes oblong and lightly russeted but attractively colored. NDO4588-3 tubers were round, well shaped and very colorful but even larger than those of A79543-4R. NDO2686-6R produced small, round, brightly colored tubers but yields were only average. Because of premium prices often paid for small reds, small tuber size is more lucrative than high yields in many instances.

### Chippers:

Four chippers were compared to Atlantic and Chipeta at Corvallis (Oregon Tables 6, 7 and 8). Two specialty yellow-fleshed varieties were also included in the trial. Yukon Gold is a good round, widely grown Canadian fresh market variety with attractive yellow flesh. On the other hand, AO90319-1 is a long russet Oregon selection with moderately yellow flesh. AO90319-1 was relatively attractive and resistant to all disorders tested. Tubers were small with a high percentage of undersized.

Based on all criteria except hollow heart, A90467-14 appeared to be a very good chipping selection. It yielded moderately well, had high solids and produced relatively light-colored chips from both 40 and 50°F storage in December. Tubers were highly attractive but more prone to hollow heart than any other entry. A90467-14 has a long storage dormancy based on relatively minor sprout development on December 23 (Oregon Table 8).

#### **Late Blight Screening:**

Only results of the advanced screening trial (42 entries) will be reported here. Information for 4- and 12-hill clones has been forwarded to cooperators for purposes of parental selection and is available from the authors.

The late blight epidemic was unusually delayed in 1999. Despite two late August inoculations with US 8, serious infection did not occur until mid-to-late September. Consequently, tuber infection levels were quite low and many early-maturing varieties escaped infection altogether (Oregon Table 8). While results reported may be indicative, they are basically inconclusive because of delayed disease onset. Surviving selections will be evaluated further in 2000.

Because of the unusually late onset of blight, Russet Norkotah which has typically approached 40% or more tuber infection at Corvallis showed only about 5% infection in 1999, even after 30 days of storage at room temperature. Ranger Russet, which is not early maturing, also showed very little tuber infection for unknown reasons.

Some entries apparently showed more tuber infection at harvest than after 30 days of storage. Such results are obviously misleading and due to sampling variance. Tubers were randomly selected at harvest, peeled as needed, and discarded after examination; others were then randomly selected for storage to allow blight infection to develop further. Such sampling procedures introduce large variances.

Previous late blight trials have shown considerable variation among varieties. Russet Burbank and most new Tristate clones have shown some tuber resistance compared to Ranger Russet, Russet Norkotah and Shepody.



**Oregon Table 1.** Average performance of 24 varieties and selections at four Oregon locations (Hermiston, Powell Butte, Klamath Falls, and Ontario), 1999.

Entry	Yield		% No.1	Tuber Size oz.	L/W <sup>1</sup> Ratio	Sp. Gravity <sup>2</sup>	<sup>3</sup> Fry Color USDA	<sup>4</sup> Sug. Ends %	<sup>5</sup> HH, BB %	<sup>6</sup> Bl. Spot %	Vine Mat. 5=Late
	Total Cwt/a	US#1 Cwt/a									
R. Burbank	478	253	53	5.86	1.94	1.081	0.88	0.0	7.0	7.0	3.0
Ranger R.	542	392	72	7.75	1.92	1.084	0.85	1.0	0.0	5.0	3.3
Shepody	538	333	62	8.83	1.67	1.077	0.86	19.0	1.0	4.0	2.5
Norkotah R.	465	366	79	6.64	1.62	1.078	0.98	0.0	1.0	3.0	2.4
Atlantic	471	386	82	6.85	1.01	1.088	0.00	0.0	13.0	7.0	3.0
AO85165-1	452	346	76	6.63	1.72	1.074	1.16	1.0	5.0	3.0	4.0
AO87277-6 <sup>7</sup>	539	429	80	7.52	1.71	1.085	0.25	1.0	1.0	2.0	3.5
AO89128-4	522	319	61	5.50	2.00	1.088	0.00	0.0	0.0	2.0	3.3
AO90014-1	395	305	77	5.89	1.96	1.082	0.00	0.0	0.0	3.0	2.9
AO90319-1	473	322	68	4.95	1.75	1.080	0.91	0.0	1.0	5.0	3.3
AO91812-1	546	438	80	5.97	0.96	1.084	0.00	0.0	2.0	4.0	3.9
AO92007-2	476	366	77	6.13	1.95	1.080	0.38	0.0	4.0	4.0	2.7
AO92017-6	560	427	76	7.93	1.83	1.084	0.59	0.0	2.0	11.0	3.8
COO93031-3	487	400	82	8.40	2.02	1.075	0.74	0.0	2.0	5.0	3.0
AO92252-1	510	393	77	7.60	2.05	1.085	0.16	0.0	1.0	0.0	3.5
AO92378-1	390	323	83	6.91	1.68	1.082	0.02	0.0	4.0	1.0	3.7
AO93317-5	554	451	81	6.98	1.55	1.080	0.20	0.0	0.0	0.0	3.8
AO94169-8	461	360	78	5.76	1.91	1.071	0.99	1.0	4.0	2.0	2.7
AO94203-3	430	360	84	9.04	1.77	1.076	1.11	1.0	0.0	3.0	3.4
AO94204-2	508	421	83	8.54	1.52	1.075	1.46	1.0	4.0	1.0	3.5
AO94204-7	493	386	78	7.60	1.99	1.070	0.82	1.0	0.0	0.0	3.2
AO94205-1	511	373	73	5.79	1.62	1.077	0.47	0.0	11.0	3.0	2.3
AO94218-1	561	416	74	7.02	1.66	1.072	0.63	4.0	16.0	6.0	2.9
AO94224-1	515	388	75	6.45	1.74	1.080	1.10	1.0	2.0	1.0	2.8

<sup>1</sup> Tuber Length /Width Ratio.

<sup>2</sup> Air/water method

<sup>3</sup> Light 1, dark 5.

<sup>4</sup> Sugar ends

<sup>5</sup> Hollow Heart (HH), and Brown center (BC)

<sup>6</sup> Black spot

<sup>7</sup>Entries in bold type will be tested further, all others will be discarded.

**Oregon Table 2.** Yield, grade, size distribution, and specific gravities of 22 russet potato entries at Corvallis, Oregon, 1999.

Entry	Total	U.S. No. 1 (cwt/a)				Yield (cwt/a)		%U.S.	Oz/	Specific
	Cwt/A	Total	4-6 oz	6-10 oz	>10 oz	<4 oz	2' s	No.1	Tuber <sup>1</sup>	Gravity <sup>2</sup>
R. BURBANK	490	155	45	96	14	21	271	32.1	4.64	1.095
RANGER R	461	275	35	124	115	14	172	59.3	6.91	1.100
R. NORKOTAH	364	251	36	108	107	15	98	68.9	5.62	1.086
A88338-1	462	287	34	143	109	15	160	62.3	6.76	1.100
AO87277-6	470	310	21	141	148	19	141	66.2	6.57	1.097
A8893-1	461	326	48	186	92	16	119	70.5	5.82	1.094
A9014-2	391	237	30	139	69	18	136	58.8	5.58	1.097
AC87084-3	468	346	68	172	106	15	107	73.3	5.32	1.103
AC87138-4	469	211	79	85	48	40	218	45.0	4.11	1.107
CO89036-10	460	286	82	132	72	25	149	61.9	4.26	1.092
AC87079-3	464	290	74	136	80	24	149	62.2	5.09	1.104
AO92007-2	385	185	40	104	41	31	169	47.9	4.46	1.100
COO93031-1	410	255	56	105	94	20	135	62.5	4.89	1.089
AO92252-1	398	210	17	106	87	17	171	51.8	5.95	1.107
AO92378-1	338	169	29	86	53	18	151	49.9	5.10	1.096
AO93317-5	466	321	76	177	67	15	130	68.6	4.64	1.102
AO85165-1	482	294	58	149	86	28	160	61.1	4.74	1.088
AO89128-4	420	165	38	91	35	49	206	39.5	3.85	1.106
R. LEGEND	437	264	45	116	103	9	164	59.1	6.82	1.096
AO92017-6	458	242	66	122	54	21	195	52.7	4.24	1.102
AO90014-1	322	166	35	98	34	28	128	50.9	4.43	1.096
NDD840-1	326	144	27	94	23	27	155	44.4	4.21	1.095
Mean	427	245	47	123	74	22	158	56.8	5.18	1.098
CV (%)	13.6	245	49	24	51	33	24	17.6	14.46	0.49
LSD (0.05)	81.9	85.0	32	41	53	10	55	14.1	1.06	0.008

<sup>1</sup>Total weight per plot/total number of tubers per plot

<sup>2</sup> Air/water method

**Oregon Table 3.** External and internal tuber defects, and general characteristics of 22 russet varieties and selections at Corvallis, Oregon, 1999.

Entry	External Defects (%) <sup>1</sup>			Internal Defects (%) <sup>2</sup>				Comments
	K	GC	G	HH	VD	IN	BC	
R. BURBANK	11.3	9.0	0.2	5.0	10.0	2.5	22.5	Good yield but mostly culls.
RANGER R.	8.0	5.7	2.2	0.0	10.0	20.0	0.0	Rough, deep eyed.
R. NORKOTAH	2.9	3.6	1.3	5.0	10.0	5.0	0.0	Looks good but low yield.
A88338-1	9.6	4.1	0.2	5.0	2.5	0.0	5.0	High yield but poor shape.
AO87277-6	4.4	3.9	3.0	5.0	7.5	0.0	0.0	Uniform, looks good.
A8893-1	2.0	3.8	0.4	10.0	0.0	5.0	0.0	Deep eyes, rough, oblong.
A9014-2	4.2	5.3	1.4	10.0	5.0	5.0	2.5	Low yield, good oblong russet
AC87084-3	1.3	3.7	0.6	30.0	0.0	2.5	2.5	Good yield , poor shape
AC87138-4	1.7	4.1	0.5	30.0	0.0	2.5	2.5	Lots of culls, long russet
CO89036-10	0.2	1.1	1.4	0.0	5.0	2.5	0.0	Nice shape, oblong russet
AC87079-3	2.1	1.6	0.2	35.0	12.5	0.0	0.0	Small, poor shape
AO92007-2	2.6	4.0	0.8	12.5	5.0	5.0	0.0	Nice heavy oblong russet
COO93031-1	2.8	2.6	1.7	10.0	5.0	5.0	0.0	Nice oblong russet, some short
AO92252-1	1.8	4.5	1.0	7.5	5.0	7.5	0.0	Oblong, poor shape.
AO92378-1	2.8	6.1	2.5	10.0	10.0	0.0	2.5	Round to oblong, good russet
AO93317-5	0.6	2.9	0.7	5.0	5.0	2.5	0.0	Poor shape, fair russet
AO85165-1	1.0	2.4	1.9	10.0	5.0	12.5	2.5	Large, rough, lenticels 12% PVY
AO89128-4	3.7	1.5	0.0	5.0	7.5	5.0	2.5	Poor shape
R. LEGEND	8.7	12.0	2.1	7.5	0.0	2.5	7.5	Nice russet,
AO92017-6	6.3	3.6	2.2	5.0	0.0	5.0	5.0	Poor shape
AO90014-1	0.8	0.8	0.9	2.5	5.0	2.5	5.0	66% PVY, poor shape, lenticels
NDD840-1	5.4	3.2	0.0	5.0	5.0	5.0	0.0	Poor shape
Mean	3.8	4.1	1.1	9.8	5.2	4.4	2.7	
CV (%)	80.0	73.8	98.5	98.1	171.6	181.0	234.7	
LSD (0.05)	4.3	4.2	1.6	13.5	12.7	11.3	9.0	

<sup>1</sup> K = Knobs, GC = Growth Cracks, G = Sunburn.

<sup>2</sup> HH = Hollow Heart, VD = Vascular Discoloration, IN = Internal necrosis, BC = Brown center. Figures based on 10 U.S. No 1 tubers per replication.

**Oregon Table 4.** Yield, grade and size distribution, and specific gravity of 14 red varieties and selections at Corvallis, Oregon, 1999.

	Total	Yield U.S. No. 1 (cwt/a)				Yield (cwt/a)		% U.S.	Oz <sup>1</sup> /	Specific
Entry	Cwt/A	Total	4-6 oz	6-10 oz	>10 oz	<4 oz.	2's	No. 1.	Tuber	Gravity <sup>2</sup>
Dk. R. Norland	457	310	36	166	108	15	132	67.7	5.41	1.082
Red LaSoda	494	290	59	134	96	11	193	58.8	6.16	1.079
AO92657-3	465	322	83	118	121	15	128	69.4	5.25	1.081
CO89097-2	492	312	48	166	98	21	158	63.8	5.22	1.090
NDO4300-1	402	245	75	106	63	28	130	61.1	4.08	1.071
NDO4588-5	434	311	54	148	108	18	105	71.3	4.91	1.078
NDO4592-3	402	262	78	115	69	23	116	63.9	4.52	1.087
NDC4655-1	432	240	54	141	45	23	169	55.8	4.66	1.079
NDO2686-4R	378	220	61	108	51	35	123	56.8	4.15	1.077
A79543-4R	473	313	93	160	59	28	132	66.3	4.02	1.084
NDO5437-7	383	106	75	27	4	80	197	27.9	2.16	1.078
NDO4323-2	495	277	82	146	50	22	196	55.9	4.84	1.086
NDO2686-6R	421	249	71	150	27	33	139	59.1	3.88	1.087
NDO2438-6R	416	257	70	116	70	13	145	61.6	5.25	1.072
Mean	439	265	67	129	69	26	147	60.0	4.61	1.081
CV (%)	9.4	18	34	21	48	31	21	14.2	11.9	0.444
LSD (0.05)	58.7	70	33	38	47	11	43	12.2	0.78	0.007

<sup>1</sup> Total weight per plot/total number of tubers per plot

<sup>2</sup> Air/water method

**Oregon Table 5.** External and internal tuber defects, and general characteristics of 14 red varieties and selections at Corvallis, Oregon, 1999.

Entry	External Defects (%) <sup>1</sup>			Internal Defects (%) <sup>2</sup>			Comments
	K	GC	G	BC	VD	IN	
Dk.R. Norland	4.1	4.8	1.8	7.5	20.0	2.5	Medium round, raised lenticels, fair color
Red LaSoda	7.7	14.0	1.0	2.5	5.0	0.0	Deep eyes, poor shape
AO92657-3	3.8	2.6	2.6	2.5	15.0	5.0	Round - oblong, slightly rus., good color
CO89097-2	4.6	3.8	3.3	2.5	20.0	2.5	Poor shape, fair color
NDO4300-1	1.8	2.0	0.8	2.5	17.5	7.5	Round red, skinning problem, fair color
NDO4588-5	2.6	1.6	0.4	0.0	22.5	0.0	Round red, nice red color
NDO4592-3	4.6	2.1	1.7	0.0	17.5	5.0	Fair color,
NDC4655-1	4.8	6.8	1.4	0.0	32.5	5.0	Oblong, skinning, nice color
NDO2686-4R	1.2	0.8	0.2	0.0	25.0	7.5	Round, nice color, poor yield, 12%virus
A79543-4R	0.1	5.4	0.9	0.0	5.0	0.0	Round red, small tubers
NDO5437-7	0.2	0.7	0.1	0.0	35.0	0.0	Round red, small tubers, poor yield
NDO4323-2	3.2	9.6	1.2	2.5	17.5	12.5	Round red , enlarged lenticels
NDO2686-6R	1.0	0.8	0.4	2.5	7.5	12.5	Round red, good color, smooth
NDO2438-6R	6.7	3.4	1.8	5.0	10.0	22.5	Poor shape, rough, fair color
Mean	3.3	4.2	1.2	2.0	17.9	5.9	
CV (%)	65.1	65.7	103.2	232.6	47.6	128.2	
LSD (0.05)	3.1	3.9	1.8	6.5	12.2	10.8	

<sup>1</sup> K = Knobs, GC = Growth Cracks, G = Sunburn.

<sup>2</sup> BC = Brown center, VD = Vascular discoloration, IN = Internal necrosis. Figures based on 10 U.S. No 1 tubers per replication.

**Oregon Table 6.** Yield, grade, size distribution, and specific gravities of six chipping and two specialty varieties and selections at Corvallis, Oregon, 1999.

	Total	Yield U.S. No. 1 (cwt/a)				Yield (cwt/a)		% U.S.	Oz/	Spec. <sup>2</sup>
Entry	Cwt/A	Total	4-6 oz	6-10 oz	>10 oz	<4 oz	2's	No. 1	Tuber <sup>1</sup>	Grav.
A90467-14	433	265	82	140	44	11	156	61.3	5.12	1.118
AC87340-2	420	263	93	147	23	16	141	62.1	4.28	1.086
AO91812-1	417	226	90	100	35	19	172	53.7	4.17	1.095
CHIPETA	490	270	63	128	77	13	207	55.2	5.53	1.100
AC89653-3	471	251	11	133	7	25	196	53.2	3.78	1.099
ATLANTIC	352	215	63	90	61	9	129	60.7	5.11	1.097
AO90319-1	398	190	55	98	37	26	182	47.4	4.39	1.095
YUKON GOLD	358	214	42	73	99	6	138	58.3	6.27	1.092
Mean	417	237	75	114	48	16	165	56.5	4.83	1.098
CV (%)	7	22	26	24	54	38	22	18.7	10.63	0.523
LSD (0.05)	42	77	29	39	38	9	53	15.5	0.76	0.008

<sup>1</sup> Total Weight/Total number of tubers

<sup>2</sup> Air/water method

**Oregon Table 7.** External and internal tuber defects, and general characteristics of six chipping and two specialty varieties and selections at Corvallis, Oregon, 1999.

Entry	External Defects (%) <sup>1</sup>			Internal Defects (%) <sup>2</sup>			Comments
	K	GC	G	HH	VD	SEB	
A90467-14	3.7	10.3	2.3	27.5	7.5	5.0	Round white chipper, nice
AC87340-2	3.7	4.3	2.5	0.0	7.5	2.5	Round and smooth chipper, feathering
AO91812-1	1.9	9.0	2.8	2.5	7.5	7.5	Round and smooth chipper, var. size
CHIPETA	8.7	8.0	9.1	2.5	0.0	0.0	Variable size, feathering
AC89653-3	2.2	2.2	2.3	2.5	2.5	5.0	Round white, small tubers
ATLANTIC	7.7	4.6	2.4	12.5	0.0	0.0	33% virus, round white, uniform, nice
AO90319-1*	3.3	0.9	0.6	0.0	0.0	0.0	Long russet, yellow-flesh
YUKON GOLD*	8.5	3.9	7.1	17.5	5.0	2.5	Nice, yellow-fleshed tubers
Mean	5.0	5.4	3.6	8.1	3.7	2.8	
CV (%)	59.8	56.8	79.5	140.5	195.2	188.6	
LSD (0.05)	4.4	4.5	4.2	16.8	10.8	7.8	

<sup>1</sup> K = Knobs, GC = Growth Cracks, G = Sunburn.

<sup>2</sup> HH = Hollow Heart, VD = Vascular Discoloration, SEB = Stem End Browning. Figures based on 10 U.S. No 1 tubers per replication.

\* Specialty clones



**Oregon Table 8.** Specific gravity, fry color and sprouting characteristics of six chipping varieties and selections at Corvallis, Oregon, 1999.

	Sp. Grav. <sup>1</sup>	Agtron Chip Color <sup>2,3</sup>					%Sprouted		Sprout Length <sup>4</sup>	
Entry	10/19	10/19	11/23		12/23		12/23		12/23	
			40°F	50°F	40°F	50°F	40°F	50°F	40°F	50°F
A90467-14	1.118	43.7	36.8	42.8	31.5	40.2	0.0	27.5	0.0	0.06
AC87340-2	1.086	44.2	29.9	41.5	25.4	40.1	0.0	100.0	0.0	0.44
AO91812-1	1.095	44.8	30.6	42.2	21.9	41.0	0.0	76.3	0.0	0.09
CHIPETA	1.100	44.0	30.0	42.6	23.2	40.0	0.0	30.0	0.0	0.13
AC89653-3	1.099	45.0	33.0	41.8	29.2	39.9	0.0	91.3	0.0	0.56
ATLANTIC	1.097	44.6	30.9	43.2	24.2	40.5	0.0	90.0	0.0	0.19
Mean	1.098	44.4	31.9	42.3	25.9	40.3	NA	69.2	NA	0.25
LSD (0.05)	0.008	NS	3.3	NS	4.0	NS	NA	2.3	NA	0.17

<sup>1</sup> Air/water method

<sup>2</sup> Agtron reflectance value (red filter), high numbers = light color

<sup>3</sup> To determine PC/SFA value use the following formula:  $PCSFA = (Agtron\ value \times B0.113) + 6.70984$

<sup>4</sup> Expressed in inches

**Oregon Table 9.** Foliar late blight disease ratings and percent tuber infection at harvest and after 30 days at room temperature, advanced replicated selections, Corvallis.

Entry	Fol. Rat. <sup>1</sup>	%Tub. Inf. <sup>2</sup>	%Tub. Decay <sup>3</sup>	Entry	Fol. Rat. <sup>1</sup>	%Tub. Inf. <sup>2</sup>	%Tub. Decay <sup>3</sup>
R. Burbank	4.2	7.5	0.0	A90467-14	4.5	7.5	0.0
Ranger R.	3.2	2.5	10.0	AC87340-2	7.2	2.5	10.0
R. Norkotah	7.5	2.5	5.0	AO91812-1	2.5	10.0	20.0
Shepody	7.0	2.5	15.0	AO90319-1	5.2	0.0	0.0
A88338-1	2.2	5.0	5.0	AC87084-3	4.0	0.0	5.0
AO87277-6	4.5	2.5	20.0	AO92007-2	5.0	0.0	0.0
A8893-1	7.7	10.0	10.0	COO93031-1	6.5	2.5	5.0
A9014-2	5.0	0.0	5.0	AO92252-1	3.0	0.0	0.0
PORTGNP3-138	8.2	2.5	0.0	AO92378-1	3.7	5.0	15.0
PORTGS124-1	6.7	7.5	20.0	AO93317-5	3.5	0.0	10.0
PORTGS129-1	6.7	10.0	0.0	AO85165-1	5.5	5.0	5.0
A89219-7	5.5	2.5	25.0	Atlantic	6.5	0.0	0.0
AO90014-1	5.0	5.0	10.0	Umatilla R.	4.0	0.0	0.0
AO92017-6	2.7	20.0	0.0	Legend R.	4.5	0.0	5.0
Dk. R. Norland	7.0	5.0	15.0	NDO2438-6	8.2	2.5	5.0
Red LaSoda	7.2	2.5	15.0	NDO2686-6	8.2	0.0	5.0
AO92657-3	9.0	5.0	0.0	Yukon Gold	7.5	2.5	0.0
CO89097-2	6.7	12.5	0.0	A9045-7	3.0	0.0	0.0
NDO4300-1	8.5	0.0	10.0	A90586-11	1.5	0.0	10.0
NDO4588-5	7.5	2.5	5.0	TXN102	6.0	0.0	0.0
NDO4592-3	8.0	10.0	5.0	TXN296	6.2	0.0	0.0
Mean					5.6	3.7	6.4

<sup>1</sup>Ratings are averages for 2 reps: 1 = no foliar injury; 2 = 1-5% injury; 3 = 5-10% injury; 4 = 10-20%; 5 = 25-40%; 6 = 40-60%; 7 = 60-75%; 8 = 75-90%; 9 = 90-100% injury.

<sup>2</sup> Percent of late blight infected tubers based on 10 randomly selected tubers.

<sup>3</sup>Percent tuber decay based on 10 randomly selected tubers after one month of storage under room temperature.

## Pennsylvania

B. J. Christ and M.W. Peck

The potato evaluation trial was conducted at the Russell E. Larson Agricultural Research Center in Rock Springs, PA. This trial is part of an extensive and on-going project that evaluates promising clones for yield and chip processing potential. Clones that are identified as excellent performers are then evaluated in regional trials across Pennsylvania.

### Materials and Methods

The trial was planted on May 17 as single row plots in a randomized complete block design with three replications. Plots were 10 ft. long, 36 in. between rows, 8 in. between seed pieces, and 5 ft. breaks between treatments within the rows. Fertilization was banded in furrow during planting at a rate of 921 lbs/A of 5-10-20 (N-P-K). The plots received 1.7, 1.5 and 0.5 inches of irrigation during June, July and August, respectively. The plots were vine killed on September 13. The tubers were harvested October 13-16.

Specific gravity was determined by the weight-in-air/weight-in-water method. Tubers were held at ambient temperature until they were placed in storage. The tubers chipped prior to January were held in a 55° F storage and those chipped after December were held at 45° F and then chip at 45° F or reconditioned at 55° F for three or six weeks prior to chipping. Samples were chipped five times throughout the winter. Four tubers from each clone were peeled, cut in half, and sliced. Eight center slices from each half were cut and fried at 365° F. The chip samples were rated on a scale of 1-10 according to a modified snack food color chart.

### Results

Rainfall was below normal throughout the season until late August, therefore yields were lower than normal.

There were numerous lines with yield greater than Atlantic or Snowden. However, of those lines only a few had consistently light chip color. The following lines produced light chips regardless of storage temperature: Snowden, Eva (NY103), NY112, NY115, NY120, AF1668-60, AF1856-1, B0178-34, B0766-3, B1240-1, ND2470-27, and Dakota Pearl. The following lines chipped directly out of 45° F storage: Snowden, B0766-3, NY115, NY112, NY120, and AF1668-60. All of the above lines except for AF1668-60 and NY115 had adequate to excellent yields during the 1999 growing season.

The lines with the highest specific gravity were: B0178-34, B1240-1, B1338-20, NY120, T35-30, T3-5, T35-34, MSB076-2, and ARS-W95-6500-3.

Those lines with nice appearance and high yield that perform well as a round white table-stock line were: Keuka Gold (NY101), Eva (NY103), AF1437-1, and AF1763-2. Red-skinned table-stock lines with high yield were: ND5084-3R, B1758-3, and B1491-5. ND4093-4Rus was a high yielding russet-skinned line with good fry color. Another russet with excellent fry color was B1409-2.

### Acknowledgements

The evaluation trial was funded in part by the Pennsylvania Potato Research Program. We acknowledge the provision of seed by Kathleen G. Haynes, USDA-Beltsville; Robert L. Plaisted, Cornell University; Alvin F. Reeves, University of Maine; Richard G. Novy, North Dakota State University; and , David Douches, Michigan State University.

**Pennsylvania Table 1.** Total and >2" yield, percentage >2", specific gravity, and chip color results from potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)		Percent- age >2"	Specific Gravity	Chip Color**				
	Total	>2"			Nov. <sup>1</sup>	Dec. <sup>2</sup>	Jan. <sup>3</sup>	Feb. <sup>4</sup>	Feb. <sup>5</sup>
Atlantic	516	418	81	1.081	4	4	5	6	5
Snowden	413	350	85	1.075	3	3	3	4	3
Superior	377	325	86	1.068	5	5	7	8	6
Katahdin	470	361	76	1.066					
B0178-34	330	256	77	1.078	4	4	5	7	4
B0564-8	407	335	83	1.069	5	5	5	6	5
B0564-9	334	300	90	1.069	6	7	7	7	7
B0766-3	331	302	92	1.072			3	5	3
B1240-1	476	398	84	1.078	5	5	5		4
B1316-5	457	393	87	1.084	6	6	7		8
B1322-19	388	310	80	1.070	6	7	8	8	6
B1327-6	369	343	93	1.072	7	7	6	7	6
B1338-20	446	382	86	1.075	4	5	4	6	4
B1425-9*	428	351	82	1.079	5	5	5	7	4
B1709-6	372	331	90	1.071	4	5	5	6	5
B1712-18	314	260	83	1.066	3	4	5	5	5
B1722-5	534	425	80	1.065	7	7	7	8	7
B1752-5*	343	278	81	1.067	7	6	6	8	7
B1801-6	457	402	87	1.072	6	6	7	8	7
B1805-6	362	183	51	1.069	5	4	5	7	4
B1806-8	396	328	82	1.071	6	6	7	7	6
B1825-5	374	304	82	1.064	5	5	6	6	6
B1826-1	440	380	86	1.064	4	4	4	5	4
Keuka Gold (NY101)*	505	418	82	1.069	6	5	6	7	6
Eva (NY103)	417	383	92	1.065	6	5	5	6	5
NY112	512	455	89	1.072	6	4	3	4	3
NY115	414	343	83	1.072	4	4	3	4	4
NY120	451	411	91	1.076	5	4	3	4	4
NY121	361	189	52	1.071	6	7	6	7	5

Pennsylvania Table 1. Continued.

Cultivar	Yield (cwt/A)		Yield Percent- >2" age	Specific Gravity	Chip Color**					
	Total				Nov. <sup>1</sup>	Dec. <sup>2</sup>	Jan. <sup>3</sup>	Feb. <sup>4</sup>	Feb. <sup>5</sup>	
NY123	391	341	88	1.078	7	6	7	8	7	
R17-7	533	495	93	1.061	4	5	7	8	7	
R17-106	512	413	80	1.061	5	5	7	7	7	
S14-2	420	366	87	1.074	4	3	6	5	4	
S28-2	514	440	85	1.067	7	6	7	8	5	
S32-3	476	405	85	1.069	5	5	6	7	5	
S33-5	366	308	84	1.072	5	4	5	6	5	
S300-7	258	220	86	1.070	3	3	3	4	3	
T2-2	383	359	94	1.093	4	5	7	7	5	
T3-9	396	343	87	1.072	6	5	4	7	4	
T3-11	280	251	90	1.066	4	4	4		4	
T4-2	431	361	84	1.076	5	4	3	6	4	
T35-5	287	69	24	1.076	4	4	5	6	4	
T35-8	376	316	84	1.073	5	5	6	6	4	
T35-30	367	336	91	1.077	5	4	4	5	6	
T36-13	271	218	80	1.069	4	4	4	5	4	
T37-3	389	325	84	1.074	6	4	5	6	6	
T38-9	373	294	78	1.078	4	4	6	4	4	
T43-27	445	412	93	1.070	5	5	6	7	5	
T45-7	459	393	86	1.068	8	8	9	10	7	
AF1437-1	400	365	91	1.056	7	8	9	9	8	
AF1668-60	361	322	89	1.072	3	4	3	4	3	
AF1907-6	356	304	86	1.062	5	4	7	8	7	
AF1949-1	440	372	84	1.071	7	8	7	9	7	
AF1951-1	479	435	91	1.067	7	7	7	7	6	
AF1935-6	468	418	89	1.070	5	5	5	6	4	
MSB 076-2	416	342	82	1.081	4	4	5	5	3	
MSE 221-1	416	302	73	1.064	8	8	9	10	9	
MSE 228-11	337	254	75	1.076	6	7	8	8	7	
MSE 246-5	316	233	74	1.094	5	5	6	7	6	

Pennsylvania Table 1. Continued.

Cultivar	Yield		Yield (cwt/A)	Percent- age %>2"	Specific Gravity	Chip Color**				
	Total	>2"				Nov. <sup>1</sup>	Dec. <sup>2</sup>	Jan. <sup>3</sup>	Feb. <sup>4</sup>	Feb. <sup>5</sup>
MSG 274-3	452	149	32	1.093	6	8	6	8	9	7
MSNT-1	324	254	78	1.073	5	5	4	5	5	4
NC MSA 091-1	474	435	91	1.084	4	7	5	7	7	4
NC MSB 107-1	531	454	86	1.069	6	6	6	6	7	6
NC MSE 018-1	405	293	72	1.053	5	6	5	6	7	5
ND 2470-27	512	368	71	1.068	4	5	4	5	7	4
Dakota Pearl	425	374	88	1.067	4	4	4	4	5	4
Victoria*	547	401	73	1.070	6	5	6	6	6	6
Caesar	620	516	83	1.070	7	6	5	8	8	6
Latona*	616	465	75	1.065	8	9	8	7	7	8
AF1763-2						8	7	10	10	8
AF1775-2						7	7	8	8	6
AF1856-1						6	4	6	7	5
AF1857-2						6		6	7	6
AF2005-2				1.064		9		9	10	8
B0766-3				1.072		3		3	5	3
LSD	84	85	41							

Non-Replicated Entries

B1337-13	282	132	47	1.076	5	5	4	5	6	5
B1339-2	357	226	63	1.085	5	5	4	5	5	4
B1624-22	445	356	80	1.069	5	6	4	5	5	5
B1801-3	486	420	86	1.072	6	8	5	9	9	7
B1828-4	478	406	85	1.068	4	6	3	6	6	4
B1829-5	357	297	83	1.077	9	5	4	5	5	5
B1834-1	412	276	67	1.084	5	4	4	5	5	5
B1856-10	393	367	93	1.076	7	7	5	8	8	6
B1870-3	437	356	82	1.051	7	9	7	10	10	8



Pennsylvania Table 1. Continued.

Cultivar	Yield		Percent- age >2"	Specific Gravity	Chip Color**					
	(cwt/A) Total	(cwt/A) >2"			Nov. <sup>1</sup>	Dec. <sup>2</sup>	Jan. <sup>3</sup>	Feb. <sup>4</sup>	Feb. <sup>5</sup>	
B1873-6	295	227	77	1.070	4	3	6	7	5	
B1884-9	412	343	83	1.073	4	4	6	7	7	
W95-498-5	333	180	54	1.073	3	3	5	5	4	
T3-5	436	390	90	1.076	4	3	4	4	4	
T4-7	292	187	64	1.065	5	6	6	7	5	
T20-15	393	275	70	1.071	6	6	7	7	5	
T27-13	231	111	48	1.076	6	6	4	5	5	
T27-21	401	301	75	1.070	6	6	6	7	7	
T28-1	431	372	87	1.064	6	4	6	7	6	
T35-19	444	221	50	1.084	5	5	7	7	7	
T35-34	586	462	79	1.078	4	4	4	6	4	
T38-13	128	123	96	1.072		6	4	5	4	
AF1896-2	356	270	76	1.070	7	4	7	8	7	
AF2005-2	173	152	88	1.064			9	10	8	
ARS-W95-6498-1	214	86	40	1.071	4	3	5	7	5	
ARS-W95-6498-2	484	411	85	1.077	7	7	7	7	7	
ARS-W95-6498-5	412	362	88	1.067	4	4	4	5	5	
ARS-W95-6500-3	320	273	86	1.086	4	3	5	6	5	
ARS-W95-6527-1	339	290	86	1.075	5	5	8	9	7	
ARS-W95-6543-3	326	290	89	1.080	4	4	7	7	6	
ARS-W95-6545-3	273	236	86	1.079	6	4	7	7	6	
ARS-W95-6553-1	345	298	86	1.076	7	7	7	8	7	

\*\*Chip color is based on a 1-10 scale with 1 = lightest, 10=darkest, and 1-5 = acceptable chip color.

<sup>1</sup> Chipped November 16, 1999 <sup>2</sup> Chipped December 21, 1999 out of 55°F.

<sup>3</sup> Chipped January 31, 2000, stored at 45°F and then transferred to 55°F for 3 weeks prior to chipping.

<sup>4</sup> Chipped February 8, 2000 out of 45°F storage.

<sup>5</sup> Chipped February 21, 2000, stored at 45°F and then transferred to 55°F for 6 weeks prior to chipping.

\* Yellow Flesh

**Pennsylvania Table 2.** Total and >2" yield, percentage >2", and specific gravity results of red-skinned potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)	Yield (cwt/A)	Percentage %>2"	Specific Gravity
	Total	>2"		
D.R. Norland	474	349	78	1.055
Chieftain	512	465	91	1.061
B0811-4	197	47	25	1.081
B1102-3	208	98	47	1.059
B1145-2	287	192	67	1.064
B1491-5*	367	286	78	1.068
B1492-12	502	350	69	1.069
B1495-6	289	180	63	1.065
B1523-4	530	432	82	1.069
B1526-1	348	273	78	1.069
B1529-1	397	346	87	1.064
B1758-3	415	315	76	1.070
B1763-4	276	228	82	1.070
NY118	332	298	90	1.057
ND3574-5R	308	272	88	1.056
ND5084-3R	447	363	82	1.051
ND5256-7R	261	225	86	1.061
Amadeus*	510	398	78	1.052
Symfonia*	513	306	59	1.069
All Blue	469	310	66	1.068
Cherry Red	287	263	92	1.072
Red La Soda	480	419	87	1.063
Redsen	230	145	63	1.058
Rideau	396	362	91	1.066
S.R. Norland	336	270	80	1.051
LSD	120	90	11	
* Yellow Flesh				

**Pennsylvania Table 3.** Total and marketable yield, percentage marketable yield, specific gravity and french fry results of russet skinned/long white potato evaluation trial in Centre County, Pennsylvania.

Cultivar	Yield (cwt/A)		Specific Gravity	French Fry		Color***
	Total	Mkt.		%Mkt.	Jan. <sup>1</sup>	Feb. <sup>2</sup>
Russet Norkotah	359	230	64	1.065	2	2
BelRus	364	252	69	1.071	2	2
B1409-2	423	248	58	1.073	0	0
B1463-1	379	253	67	1.068	2	2
B1649-8	392	242	62	1.066	2	2
Amey (B9922-11)	468	240	51	1.075	1	1
ND4093-4RUS	526	257	49	1.053	0	0
Innovator	562	271	49	1.062	1	1
LSD	78	59	11			

\*\*\*French fry color scale: USDA color standards for frozen french fried potatoes with 000= lightest, 4= darkest fry.

<sup>1</sup>Jan.= Stored at 45° F and then transferred to 55° F for 3 weeks prior to frying.

<sup>2</sup>Feb. = Stored at 45° F and then transferred to 55° F for 6 weeks prior to frying.

## TEXAS

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### Variety Development and Testing

Seedling program. In 1999, 83,117 first year seedlings, resulting from 321 different parental combinations (crosses) or families, were grown for selection on the Barrett Farm near Springlake. One hundred nineteen selections were made from this material. The 1999 first year seedling tubers from Texas (20,776) were grown during the fall of 1998 at College Station, primarily from true seed provided by Joe Pavék, ID. The remaining seedling seed tubers were provided by Joe Pavék, ID (27,581), Kathy Haynes, Beltsville, MD (1,060), Al Mosley, OR (32,693), and Bob Hanneman, USDA-ARS, Madison, WI (1,007). Since the inception of the Texas Variety Development Program in 1973, 1,149,569 seedlings have been grown for selection in Texas, from which 5,989 original selections have been made.

Adaptation trials. The objectives of the adaptation trials are: (1) to test advanced selections and named varieties to determine their potential as replacement varieties for those presently grown in Texas, and (2) to identify potential parents for use in the Texas breeding program. Some 585 entries were grown near Rio Grande City, 698 advanced selections and varieties were tested in nonreplicated and replicated trials near Springlake and 210 entries near Dalhart. In addition, small trials (data not shown) consisting primarily of Texas advanced selections were grown near McCook and Dilley, TX, and Hobbs, NM. A small seed increase nursery was planted at the San Luis Valley Research Center, Center, CO (data not shown).

### 1999 Rio Grande City Trials

Summary of growing conditions. The trials planted near Rio Grande City received below normal precipitation throughout the season and a plant-damaging freeze on February 16.

#### Texas Red Advanced Selection Trial.

Fifteen red advanced selections and two sources of Red LaSoda were included in this trial (Table 1). All selection seed was Texas grown. Two of the selections have subsequently been released,

A82705-1R (IdaRose) and DT6063-1R (Cherry Red). One Red LaSoda check was from seed acquired by Starr Produce and provided to us and the other was Texas grown (Springlake 1998), the latter for direct comparison with the Texas grown selections which were also grown from seed produced at Springlake in 1998.

Summary. The selections NDTX4828-2R, NDTX731-1R, NDTX4271-5R, and NDTX4304-1R should be further evaluated in 2000.

### 1999 Early Springlake Trials.

Summary of growing conditions. The 1999 season was marked by above normal precipitation. Temperatures throughout the season were slightly below normal. An infestation of psyllids occurred during early tuberization and resulted in reduced yields across all trials.

#### Springlake Advanced Russet Selection Trial.

The trial consisted of 10 entries, including the check variety Russet Norkotah (Table 2).

Summary: The outstanding entry in terms of total and marketable yield was MWTX-2609-4Ru. This entry produced double the total yield and three times the marketable yield of the check variety Russet Norkotah. Other entries deserving mention based on general rating and/or yield include MWTX-548-2Ru, ATX91137-1Ru, and ATX82539-4Ru.

#### Springlake Red Advanced Selection Trial.

This trial consisted of 16 entries, with Red LaSoda as the check variety (Table 3).

Summary: Promising entries, based on general rating, were NDTX4304-1R, NDTX4271-5R, and NDTX5067-2R. None of the selections had total or marketable yield equal to the standard, Red LaSoda.

#### Springlake Advanced Chipping Selection Trial.

The trial consisted of 7 entries, with Atlantic as the check variety (Table 4).

Summary: With regard to yield, none of the selections stood out when compared to Atlantic. NDTX4930-5W and ATX85404-8W were the only entries that had high L\* values (65.3 and 63.2, respectively) and had high appearance ratings. Both COTX94016-2W and COTX90046-5W had satisfactory L\* values, (60.7 and 61.4, respectively) (data not shown).

NDTX4930-5W should be advanced to regional trials.

#### Springlake Advanced Yellow Flesh Selection Trial.

The yellow flesh selection trial consisted of four entries including the check variety Yukon Gold (Table 5).

Summary. BTX1749-2Ru/Y was the only entry that had a total yield equivalent to Yukon Gold. None of the entries out performed the standard check variety, Yukon Gold.

#### Springlake Russet Variety and Advanced Selection Trial - Strip Russets.

This russet strip trial consisted of 13 entries, with the check varieties Century Russet, Norgold Russet-M, and Russet Norkotah (Table 6). Yields overall were reduced, apparently due to psyllids.

Summary: The Russet Norkotah Strains continue to show promise when compared to Russet Norkotah, and Century Russet is difficult to top with regard to yield.

#### Springlake Russet Norkotah Strain Trial.

This trial consisted of 6 Russet Norkotah strains, the advanced selection TXA549-1Ru, and the check varieties Norgold Russet-M and Russet Norkotah (Table 7).

Summary. All of the entries out performed the standard checks Russet Norkotah and Norgold Russet-M. TXNS112, TXNS223, and TXNS278 were the outstanding entries based on general ratings.

### **1999 Late Springlake Potato Trials.**

Summary of growing conditions. The 1999 season was marked by above normal precipitation. Temperatures throughout this late season trial (planted May 21, 1999) were slightly below normal. An infestation of psyllids occurred early in the season and resulted in reduced yields.

#### Springlake Late Russet Norkotah Strain Trial.

The Late Russet Norkotah Strain Trial consisted of 6 Russet Norkotah strains, the advanced selection TXA549-1Ru, and standard Russet Norkotah as the check variety (Table 8).

Summary: TXNS112 appeared to be the outstanding entry based on overall performance.

### **1999 Dalhart Potato Trials.**

Summary of growing conditions. These trials were planted 10 miles north of Dalhart and received higher than normal precipitation.

#### Dalhart Russet Norkotah Strain Trial.

This trial consisted of five Texas Russet Norkotah strains (TXNS102, TXNS112, TXNS223, TXNS278, and TXNS296), two Colorado Russet Norkotah strains (CORN-3 and CORN-8), the check varieties standard Russet Norkotah and Norgold Russet-M, and the advanced selection TXA549-1Ru (Table 9). Ideal growing conditions allowed for excellent comparisons of these strains.

Summary: TXNS296 was the outstanding Russet Norkotah strain entry in this trial.

#### Dalhart Yellow Flesh Trial.

This trial consisted of 10 yellow flesh varieties or advanced selections (Table 10). Two sources of Yukon Gold seed were included - Colorado and Texas (Rio Grande City, harvested March 1999). The TX1674-1W/Y seed was also from Rio Grande City, while the TX1523-1Ru/Y and BTX1544-2W/Y seed was from the 1998 Springlake crop. Seed of the other entries was produced in Colorado.

Summary: Based on the results of this trial, no yellow flesh entries were found as replacements for Yukon Gold. While the yellow flesh russet TX1523-1Ru/Y is acceptable in many ways, its yield potential is questionable. The entry TX1674-1W/Y does deserve further evaluation.

#### Dalhart Red Advanced Selection Trial.

This trial included eight Texas red advanced selections, two newly named selections from Colorado (DT6053-1R, Cherry Red) and Idaho (A82705-1R, IdaRose), and Red LaSoda from two sources (Colorado and Texas-Rio Grande City) as the check variety (Table 11). The Red LaSoda Rio Grade City check was included as a comparison because the seed for the eight Texas selection entries was also produced in Rio Grande City.

Summary: Red LaSoda (CO) was the outstanding red entry. The performance of Cherry Red and IdaRose was very disappointing as was the performance of NDTX731-1R.



Texas Table 1. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of 17 entries in the red advanced selection trial grown near Rio Grande City, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
COTX93075-5R	169.0	55.0	33.4	20.6	1.0	0.0	113.6	0.4	3.0
A82705-1R	164.6	91.4	54.9	30.0	6.5	0.0	72.8	0.3	3.4
COO86107-1R	162.3	83.2	76.9	6.3	0.0	0.0	79.1	0.0	3.2
NDTX4828-2R	161.1	73.9	46.1	27.8	0.0	0.0	87.2	0.0	3.5
COTX93054-4R	156.4	40.9	29.0	9.8	2.1	0.0	115.5	0.0	3.0
NDTX5407-1R	150.8	62.5	43.2	19.4	0.0	0.0	88.2	0.0	3.1
NDTX5438-11R	144.8	46.5	40.9	5.6	0.0	0.0	98.4	0.0	3.0
NDTX731-1R	143.4	77.0	43.8	30.2	3.0	0.0	66.4	0.0	3.2
Red LaSoda (Starr)	140.3	116.4	31.1	41.9	43.3	0.0	23.9	0.0	3.8
COTX93068-1R	139.9	63.8	45.4	18.3	0.0	0.0	73.5	2.6	3.0
NDTX5067-2R	136.8	55.2	40.4	14.8	0.0	0.0	81.6	0.0	3.2
Red LaSoda(TX)	128.2	101.2	33.2	43.2	24.8	0.0	26.0	1.0	3.8
NDTX4271-5R	121.1	65.3	37.7	26.4	1.2	0.0	55.7	0.0	3.1
COTX93032-1R	120.4	29.9	26.0	3.0	0.9	0.0	69.4	21.1	2.5
NDTX4304-1R	114.6	67.4	42.3	25.2	0.0	0.0	38.1	9.1	3.3
DT6063-1R	113.6	67.8	41.6	17.6	8.6	0.0	45.8	0.0	2.4
NDO2438-6R	110.6	42.5	30.4	12.1	0.0	0.0	68.1	0.0	2.8
Average	139.9	67.0	41.0	20.7	5.4	0.0	70.8	2.0	3.1
L.S.D. (.05)	37.5	29.6	20.8	18.2	12.9	ns	28.4	3.1	

<sup>1</sup>1=very poor to 5= excellent



Texas Table 2. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of 10 entries in the advanced russet selection trial grown near Springlake, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
MWTeX-2609-4Ru	418.6	298.3	102.7	106.8	88.7	0.0	91.8	28.5	3.7
MWTeX-2609-2Ru	345.2	217.3	95.0	71.8	50.5	0.0	90.9	37.1	3.2
MWTeX-548-2Ru	309.3	210.5	74.0	73.8	62.7	0.0	62.9	35.9	3.7
ATX9332-13Ru	246.4	186.6	69.1	68.0	49.5	0.0	49.7	10.1	3.0
ATX91137-1Ru	218.8	130.5	77.3	29.1	24.1	0.0	75.0	13.4	3.7
ATX82539-4Ru	213.8	135.1	74.8	31.1	29.3	0.0	66.0	12.6	3.7
ATX9302-1Ru	206.2	123.9	70.1	25.2	28.5	0.0	58.1	24.3	2.7
Russet Norkotah	187.4	98.3	46.4	38.8	13.0	0.0	78.4	10.7	2.7
ATX9332-8Ru	184.3	119.2	70.5	31.1	17.7	0.0	51.3	13.8	3.0
ATX9332-5Ru	161.7	110.7	45.6	31.1	34.0	0.0	38.6	12.4	2.7
Average	249.2	163.0	72.6	50.7	39.8	0.0	66.3	19.9	3.2
L.S.D. (.05)	45.2	50.2	30.6	22.2	22.2	ns	19.7	15.6	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 3. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of 13 entries in the red advanced selection trial grown near Springlake, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
Red LaSoda	294.4	240.0	84.9	69.7	61.4	24.1	41.0	13.4	2.7
COTX93054-4R	269.5	143.1	116.5	26.6	0.0	0.0	116.5	9.9	2.0
NDTX4828-2R	255.0	180.6	86.0	41.9	41.9	10.7	55.1	19.2	3.0
NDTX4304-1R	230.7	194.8	84.1	61.6	43.5	5.6	33.4	2.5	3.7
NDTX4271-5R	227.6	186.4	82.5	58.8	42.1	2.9	39.6	1.6	3.7
NDTX5407-1R	207.6	142.9	99.0	39.2	4.7	0.0	59.0	5.6	3.0
NDTX5067-2R	207.0	153.6	107.8	33.8	12.0	0.0	49.7	3.7	4.0
COTX93032-1R	199.6	142.1	83.9	37.1	21.2	0.0	41.4	16.1	2.0
COTX93068-1R	192.0	138.4	84.5	39.0	13.2	1.7	30.3	23.3	3.0
COTX93075-5R	177.9	126.6	91.3	21.0	12.2	2.1	51.3	0.0	2.7
BTX1813-2	173.8	140.6	77.5	39.8	23.3	0.0	30.9	2.3	3.2
COTX94216-1	168.0	121.4	64.1	24.5	27.4	5.4	38.3	8.3	2.0
NDTX5438-11R	162.7	110.9	64.9	30.1	14.8	1.2	47.2	4.7	2.7
Average	212.8	155.5	86.7	40.2	24.4	4.1	48.7	8.5	2.9
L.S.D. (.05)	31.5	34.3	ns	19.7	19.3	8.5	24.0	8.0	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 4. Total yield, total yield of U.S. No.1, under 4 ounce and culls/No.2 potatoes and general rating of 8 entries in the advanced chipping selection trial grown near Springlake, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
ATX85404-8W	287.0	112.4	82.1	30.3	0.0	0.0	169.1	5.4	2.7
Atlantic	270.1	144.3	112.8	21.9	9.5	0.0	123.1	2.7	3.2
NDTX4030-5W	256.1	133.0	68.2	46.2	18.6	0.0	99.2	23.9	3.0
COTX90046-5W	202.3	100.4	55.9	35.0	9.5	0.0	98.1	3.9	3.0
NDTX5522-2W	193.4	96.3	62.5	28.5	5.2	0.0	94.8	2.3	2.9
COTX90046-1W	186.6	93.8	45.2	38.3	10.3	0.0	91.8	1.0	2.7
COTX94016-2	177.7	92.6	61.4	21.4	9.9	0.0	85.0	0.0	2.7
ATX90480-4W	176.3	71.7	42.1	24.7	4.9	0.0	88.7	15.9	2.8
Average	218.7	105.6	66.3	30.8	8.5	0.0	106.2	6.9	2.9
L.S.D. (.05)	82.7	ns	ns	ns	ns	ns	37.5	12.9	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 5. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of 4 entries in the advanced yellow flesh selection Trial grown near Springlake, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
Yukon Gold	257.5	176.7	68.7	71.1	36.9	0.0	78.3	2.5	2.9
BTX1749-2Ru/Y	245.6	123.9	60.4	51.5	12.0	0.0	118.6	3.1	2.9
BTX1754-1W/Y	219.6	70.1	51.5	16.7	1.9	0.0	145.0	4.5	2.6
BTX1749-1W/Y	144.9	76.1	55.0	15.3	5.8	0.0	66.2	2.5	2.5
Average	216.9	111.7	58.9	38.7	14.2	0.0	102.0	3.2	2.7
L.S.D. (.05)	57.8	54.7	ns	26.1	ns	ns	28.2	ns	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 6. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of 13 entries in the russet variety and advanced selection strip trial grown near Springlake, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
Century Russet	310.1	246.4	59.0	112.2	75.1	0.0	36.5	27.2	3.0
TXNS223	233.2	161.2	65.0	79.4	16.7	0.0	34.0	38.1	3.7
Norgold Russet-M	220.8	144.5	67.8	75.1	1.6	0.0	60.6	15.7	3.9
TX1385-12Ru	220.2	121.0	45.4	54.2	21.4	0.0	53.0	46.2	3.2
CORN-8	215.5	138.6	53.2	62.7	22.7	0.0	52.6	24.3	3.3
CORN-3	214.6	101.4	47.8	53.6	0.0	0.0	51.5	61.7	3.8
TXNS102	192.0	93.8	47.4	44.1	2.3	0.0	44.5	53.8	3.2
Russet Norkotah	179.4	136.3	55.9	62.3	18.1	0.0	38.3	4.9	3.9
TXNS112	153.8	112.0	39.2	67.2	5.6	0.0	28.7	13.0	3.5
TXNS278	151.7	99.4	45.2	40.6	13.6	0.0	28.0	24.3	3.9
ATX84706-2Ru	149.9	114.8	24.1	45.6	38.1	7.0	15.1	20.0	3.4
TXA549-1Ru	145.4	87.4	50.3	35.5	1.6	0.0	54.2	3.9	3.2
ATX84378-6Ru	119.8	73.0	20.8	31.5	20.8	0.0	20.4	26.4	3.0
Average	192.8	125.4	47.8	58.8	18.3	0.5	39.8	27.7	3.5
L.S.D. (.05)	15.7	29.0	16.9	25.4	22.1	3.5	16.9	22.5	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 7. Total yield, total yield of U.S. No.1, under 4 ounce and culls/No.2 potatoes and general rating of 9 Russet entries grown near Springlake , Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
TXA549-1Ru	392.2	187.6	115.1	60.0	12.4	0.0	161.4	43.3	3.2
CORN-3	336.9	148.0	113.4	23.5	11.1	0.0	97.9	91.1	2.2
TXNS112	310.1	164.7	113.8	30.9	20.0	0.0	101.7	43.7	4.0
TXNS223	276.5	159.0	114.0	35.9	9.1	0.0	83.3	34.2	4.0
TXNS102	274.0	139.6	98.3	34.2	7.2	0.0	83.9	50.5	3.2
TXNS278	265.4	152.8	109.7	30.5	12.6	0.0	69.7	42.9	4.0
CORN-8	261.2	127.4	111.5	13.6	2.3	0.0	92.8	41.0	2.2
Norgold Russet-M	241.7	119.0	84.5	23.1	11.5	0.0	94.6	28.2	3.0
Russet Norkotah	192.2	99.6	80.8	15.3	3.5	0.0	85.2	7.4	3.0
Average	283.4	144.2	104.6	29.7	10.0	0.0	96.7	42.5	3.2
L.S.D. (.05)	52.6	ns	ns	ns	ns	ns	30.9	28.0	

<sup>1</sup>1=very poor to 5= excellent



Texas Table 8. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of the Russet Norkotah strain trial grown in the late planting near Springlake, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
CORN-8	297.7	165.4	98.1	48.2	19.2	0.0	88.5	43.7	3.3
TXA549-1Ru	278.8	160.2	105.4	37.1	17.7	0.0	95.5	23.1	3.2
TXNS112	259.8	166.6	84.9	31.3	42.7	7.8	60.6	32.6	3.4
TXNS102	259.0	152.4	82.1	38.8	28.2	3.3	78.8	27.8	3.3
CORN-3	248.3	100.2	74.8	20.8	4.7	0.0	85.4	62.7	2.9
TXNS296	203.3	116.5	65.2	27.6	21.6	2.1	56.5	30.3	3.2
TXNS278	198.8	137.3	69.3	41.9	26.0	0.0	41.9	19.6	3.3
TXNS223	193.8	127.0	71.5	37.1	18.4	0.0	42.7	24.1	3.1
Russet Norkotah	183.9	122.1	78.6	32.8	10.7	0.0	55.0	6.8	3.2
Average	235.9	138.6	81.1	35.1	21.0	1.5	67.2	30.1	3.2
L.S.D. (.05)	43.0	40.7	23.2	14.5	ns	ns	18.9	17.3	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 9. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes of 10 entries of russets, including 7 Russet Norkotah strains, grown near Dalhart, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre						Under 4 oz.	Culls/ No.2
		Total	4-6		6-10		10-18		
		Yield	oz	oz	oz	oz	oz	oz	oz
Norgold Russet-M	619.2	480.8	79.2	163.7	198.3	39.6	78.6	59.8	
TXA549-1Ru	600.4	529.1	186.2	212.8	123.1	7.0	54.4	16.9	
TXNS296	580.6	483.9	125.8	242.1	101.4	14.6	71.7	25.0	
CORN-8	564.5	480.4	90.7	193.0	170.5	26.2	65.8	18.3	
TXNS112	548.0	462.9	117.3	209.5	124.3	11.8	61.9	23.1	
TXNS223	542.1	452.4	103.1	194.0	140.0	15.3	67.4	22.3	
TXNS278	481.6	402.7	89.7	189.5	111.5	12.0	53.4	25.4	
CORN-3	471.1	339.2	121.7	160.4	57.1	0.0	65.0	66.8	
TXNS102	461.6	362.1	92.6	172.6	94.6	2.3	71.3	28.2	
Russet Norkotah	425.0	360.2	82.7	174.4	87.7	15.4	50.9	13.9	
Average	541.0	443.7	111.8	193.1	124.5	14.3	65.5	31.8	
L.S.D. (.05)	96.2	95.2	31.2	ns	51.1	16.2	ns	23.8	

Texas Table 10. Total yield, total yield of U.S. No. 1, under 4 ounce and culls/No.2 potatoes and general rating of 10 entries in the yellow flesh trial grown near Dalhart, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
Yukon Gold (CO)	457.1	364.1	93.2	139.2	104.9	26.8	58.4	34.6	3.6
Molli	454.2	147.4	95.0	39.2	13.2	0.0	232.8	74.0	3.5
Delikat	431.7	255.0	78.4	106.6	69.9	0.0	91.5	85.2	2.6
FL1944	421.4	193.0	90.7	75.3	27.0	0.0	66.6	161.7	3.2
Yukon Gold (TX)	416.3	368.3	75.0	112.8	100.0	80.6	29.3	18.6	4.0
TX1674-1W/Y	391.3	351.8	78.4	115.1	112.6	45.6	26.0	13.4	4.0
Valisa	382.3	155.1	104.1	51.1	0.0	0.0	137.5	89.7	2.9
BTX1544-2W/Y	370.1	236.3	125.2	65.0	42.9	3.1	89.3	44.5	3.3
Crispin	365.6	228.0	105.6	76.1	34.0	12.2	55.0	82.7	3.4
TX1523-1Ru/Y	305.0	229.3	68.5	71.8	71.3	17.7	63.3	12.4	3.4
Average	399.5	252.8	91.4	85.2	57.6	18.6	85.0	61.7	3.4
L.S.D. (.05)	79.5	72.8	ns	42.3	41.0	41.9	37.4	39.8	

<sup>1</sup>1=very poor to 5= excellent

Texas Table 11. Total yield, total yield of U.S. No.1, under 4 ounce and culls/No.2 potatoes and general rating of 12 entries in the red advanced selection trial grown near Dalhart, Texas, 1999.

Variety or Selection	Total Yield Cwt/A	U.S. No. 1 Cwt. Per Acre					Under 4 oz.	Culls/ No.2	General Rating <sup>1</sup>
		Total Yield	4-6 oz	6-10 oz	10-18 oz	Over 18 oz			
Red LaSoda (CO)	685.6	548.5	105.8	160.2	198.4	84.1	83.9	53.2	3.9
NDTX4304-1R	520.2	365.0	115.9	154.6	94.6	0.0	76.3	78.8	3.4
NDTX4828-2R	393.8	324.7	78.6	81.6	127.8	36.7	65.8	3.3	3.5
NDTX5407-1R	355.5	294.2	55.3	95.0	137.1	6.8	44.9	16.5	3.6
NDTX5067-2R	334.4	262.9	101.7	92.6	65.6	2.9	68.5	2.9	3.7
NDTX4271-5R	326.0	261.9	98.6	114.0	49.3	0.0	58.3	5.8	3.5
Red LaSoda (TX)	324.5	265.2	44.1	92.2	76.9	52.0	28.2	31.1	3.1
NDTX5438-11R	313.6	251.7	93.2	108.9	49.5	0.0	61.9	0.0	3.4
COTX93075-5R	312.0	246.0	95.0	92.0	55.1	3.9	66.0	0.0	3.5
NDTX731-1	288.2	220.2	98.3	78.3	41.4	2.3	66.6	1.4	3.0
DT6063-1R (Cherry Red)	250.7	178.3	66.6	83.3	28.3	0.0	65.0	7.4	2.2
A82705-1R (IdaRose)	218.6	120.8	73.8	43.9	3.1	0.0	83.7	14.2	2.8
Average	360.3	278.3	85.6	99.7	77.3	15.7	64.1	17.9	3.3
L.S.D. (.05)	92.7	82.1	40.1	46.8	61.4	20.6	ns	31.0	

<sup>1</sup>1=very poor to 5= excellent

## Virginia

S.B. Sterrett and C.P. Savage, Jr.

### Introduction

Trials were conducted at the Eastern Shore Agricultural Research and Extension Center in Painter, Virginia. Promising clones were evaluated for yield, tuber quality and appearance, vine and tuber maturity, processing (chip) potential and freedom from internal and external tuber defects. To address potential marketing niches, red-skinned and russeted clones were also evaluated for suitability in this growing area.

### Methods

All trials were planted on a Bojac sandy loam soil. Trials were planted on April 22 in single row plots 25 feet in length with 3 feet between rows, 12 inches within row spacing for all except the red trial which was planted at 8 inches. A randomized complete block design with four replications was used for all trials. Fertilizer (100 lbs. N, 43.7 lbs. P, and 83 lbs. K/A) was banded at planting with imidacloprid (0.2 lb. ai/A) banded in the furrow for Colorado potato beetle control. Herbicide (1.33 lb ai/A metolachlor and 0.5 lb ai/A linuron) was applied at dragoff on May 11. All plots were sidedressed with 50 lbs. N/A (UAN) on May 28. Irrigation (1inch) was applied on May 19, June 3, and June 11. Round-white trials were harvested July 12, russet and red-skinned trials on July 21. Specific gravity was determined by the weight in air/weight in water method for all trials. Chip samples were held at ambient temperature and chipped two days after harvest.

### Growing Conditions

This was a very challenging season with planting delayed by cold, wet weather. Temperatures in late May and June were unseasonably warm. Rainfall for May was 2.4 inches below the 59-year average and the drought continued until June 12.

### Results

**Round-white Trial.** Because of the short growing season (late planting), few clones equaled Superior in marketable yield. Of those with equal yield, AF1569-2 exhibited exceptional tuber appearance and freedom from external defects. Some tubers of B1065-51 were

slightly misshapen, but no external defects were observed. Although marketable yield of B1440-18 and NYS33-5 was similar to Superior, susceptibility to growth cracks was a concern for both. Susceptibility to growth cracks was also noted for AF1949-1.

**Chip Trial.** Marketable yield of Superior, B0564-8, B0564-9, and NYS300-7 was similar to Atlantic. Several exhibited some degree of external defects, with the worst growth cracks noted for NYS300-7. Additional evaluation of B0564-8 is warranted because of high yield potential, specific gravity equal to Atlantic and exceptional chip color. Size distribution of B0564-9 tends toward larger tubers that may be less acceptable to chip processors and chip color can be marginal. Grower trials of B0564-8 will be planned when sufficient seed is available.

**Commercial Trial.** Most of these clones have been selected from Europeans breeding programs. Most were not well adapted to the late, cool spring followed by hot, dry weather experienced in May and June. Marketable yield was very poor, tubers were small, lumpy, and irregular. Second growth was a problem for all clones except Amova, Fabula and the commercial checks (Superior, Atlantic, and Yukon Gold). Bright yellow flesh was found in Fabula, Maranca, and SW93107.

**Red/Purple-skinned Trial.** The greatest marketable yield was recorded for the purple-skinned clones B0857-2 and B0967-11. Both are relatively bright purple with smooth skin texture but size distribution was more weighted toward the larger sizes than desired for the speciality market. Total and marketable yield of Red Ruby was similar to that of Dark Red Norland, but tuber appearance was rough and irregular and external defects were a concern. Skin color of Super Red Norland was bright, but yield was lower and size distribution tended more toward the larger sizes than Dark Red Norland.

**Russet-skinned Trial.** Marketable yield of russet-skinned clones continues to be a serious concern. The percentage of tubers greater than 8 oz. is too low for any of these clones to be seriously considered for commercial production in Virginia. Marketable yield of Russet Norkotah was significantly greater than R. Norkotah #3 while that of R. Norkotah #8 was intermediate. The russet clones and the late maturing clones in the commercial trial appeared to be at a greater disadvantage from the short

growing season than the early maturing round white clones in terms of skin set, tuber size and overall appearance.

### **Ratings**

Vine and tuber ratings were completed using the rating system of the U.S. Department of Agriculture Regional Project NE184. For vine ratings, maturity: 1 = senesced, 9 = totally green; air pollution: 1 = defoliated, 9 = no visible symptoms. For tuber ratings, shape: 1 = round, 5 = oblong, 9 = very long (cylindrical); appearance: 1 = very poor, 9 = excellent; skin maturity: 1 = totally peeled during harvest and grading, 9 = skin intact; and tuber defects: 1 = severe, 9 = none. Ratings of heat necrosis were made on 20 tubers in the size range 2½" to 3¼".

### **Acknowledgments**

We gratefully acknowledge the financial support of the Virginia Irish Potato Board for these trials. We thank Wise Foods, Inc., Berwick, Pennsylvania for their assistance in these evaluations and chip color determinations. We also gratefully acknowledge provision of seed by Kathleen G. Haynes, USDA-Beltsville; Robert L. Plaisted, Cornell University; and Alvin F. Reeves, University of Maine. The support of the commercial trial by Can AGRICO Potato Corp., Grand Falls, New Brunswick; Global Agri Services, Inc., Fredericton, New Brunswick; and Hettema, Fredericton, New Brunswick is greatly appreciated.



Virginia Table 1. Yield, marketable yield, percentage of yield by grade size distribution, specific gravity, and chip color of round-white trial grown for 81 days at Painter, Virginia, 1999.

Clone <sup>1</sup>	Yield >1.5" cwt/A	Marketable Yield Percentage of std. cwt/A	Size Distribution				Percentage Over		Percent Defects	Specific Gravity <sup>3</sup>	Chip Color <sup>4</sup>	
			By class (%)				1.88"	2.5"				
			1	2	3	4						
Atlantic	171	123	76	27	23	47	2	72	49	2	1.085	3
Superior (std)	193	161	100	17	27	54	1	82	55	1	1.065	
AF1455-20	102	73	45	27	29	42	2	72	44	1	1.069	
AF1569-2	220	166	103	23	21	50	5	76	55	1	1.060	
AF1921-9	181	142	88	19	22	52	4	78	56	3	1.065	5
AF1938-3	173	131	81	22	29	46	1	75	47	3	1.073	
AF1949-1	155	101	63	30	31	34	0	65	34	5	1.068	
B1065-51	242	184	114	22	28	47	2	76	49	2	1.064	
B1425-9	191	122	76	35	32	31	1	63	32	2	1.078	
B1440-18	219	177	110	17	24	54	3	81	57	2	1.062	3
NYR17-7	143	86	53	38	30	31	0	60	31	2	1.059	5
NYR17-106	137	80	50	39	22	34	4	59	38	2	1.057	
NYS28-2	202	108	67	44	34	19	0	53	19	3	1.069	
NYS32-3	219	141	88	34	31	33	0	64	33	1	1.069	4
NYS33-5	249	206	128	17	22	56	5	82	60	1	1.075	3
Waller-Duncan												
K=100, P=0.05	37	38										

<sup>1</sup>Planted April 22, harvested July 12, 1999.

<sup>2</sup>Size distribution 1 = 1.5-1.88"; 2 = 1.88-2.5"; 3 = 2.5-3.25"; 4 = >3.25".

<sup>3</sup>Determined by weight in air/weight in water method.

<sup>4</sup>Unreplicated samples, 83 days after harvest: 1-3 = acceptable, 4 = marginal, 5 = unacceptable

Virginia Table 2. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of chip trial grown for 81 days at Painter, Virginia, 1999.

Clone <sup>1</sup>	Yield >1.5" cwt/A	Marketable Yield		Size Distribution <sup>2</sup>				Percentage Over		Percent Defects	Specific Gravity <sup>3</sup>	Chip Color <sup>4</sup>
		cwt/A	Percentage of std.	1	2	3	4	1.88"	2.5"			
Atlantic (std)	166	120	100	28	26	45	1	72	46	0	1.075	3
Bolesta	59	12	10	77	15	6	0	21	6	2	1.060	
Snowden	179	90	75	49	31	19	0	50	19	1	1.071	3
Superior	215	181	151	13	23	61	0	84	61	2	1.062	4
AF1896-2	186	117	98	36	37	26	0	63	26	1	1.075	
AF1950-1	127	101	84	15	20	60	1	80	61	5	1.058	5
B0564-8	204	132	110	34	32	33	1	65	33	1	1.079	3
B0564-9	211	165	138	21	19	53	6	78	59	1	1.078	5
NY120	178	135	113	23	37	38	1	76	38	1	1.072	2
NYS14-2	148	109	91	23	23	49	2	74	51	4	1.063	4
NYS300-7	162	119	99	25	28	45	0	74	45	2	1.068	2
SW94128	13	1	<1	92	8	0	0	8	0	0	1.084	
Waller-Duncan												
K=100, P=0.05	62	42										

<sup>1</sup>Planted April 22, harvested July 12, 1999.

<sup>2</sup>Size distribution 1= 1.5-1.88"; 2=1.88-2.5"; 3=2.5-3.25"; 4=>3.25".

<sup>3</sup>Determined by weight in air/weight in water method.

<sup>4</sup>Unreplicated samples, 83 days after harvest: 1-3 = acceptable, 4 = marginal, 5 = unacceptable

Virginia Table 3. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of commercial trial grown for 81 days at Painter, Virginia, 1999.

Clone <sup>1</sup>	Yield >1.5" cwt/A	Marketable Yield Percentage cwt/A	Size Distribution <sup>2</sup> By class (%)				Percentage Over		Percent Defects	Specific Gravity <sup>3</sup>	Chip Color <sup>4</sup>
			1	2	3	4	1.88"	2.5"			
Appell	86	4	88	4	0	0	4	0	8	1.057	
Armova	155	55	54	26	9	0	36	9	10	1.048	
Atlantic	181	134	25	25	45	3	74	49	1	1.079	
Caesar	88	25	63	25	3	0	28	3	9	1.057	4
Fabula	52	29	43	16	38	0	54	38	3	1.053	5
Gallia	101	7	89	5	0	0	5	0	5	1.066	
Maranca	111	9	82	8	0	0	8	0	10	1.048	5
Matilda	40	0	100	0	0	0	0	0	0	1.075	
SW93107	30	0	95	0	0	0	0	0	5	1.065	
SW9410	91	1	96	1	0	0	1	0	3	1.060	
Superior	245	203	16	28	51	4	83	55	1	1.064	
Vivaldi	148	53	63	27	9	0	36	9	2	1.062	4
Yukon Gold	200	157	19	25	50	3	79	53	2	1.065	
Waller Duncan											
K=100, P=0.051	49	45									

<sup>1</sup>Planted April 22, harvested July 12, 1999.

<sup>2</sup>Size distribution 1= 1.5-1.88"; 2=1.88-2.5"; 3=2.5-3.25"; 4=>3.25".

<sup>3</sup>Determined by weight in air/weight in water method.

<sup>4</sup>Unreplicated samples, 83 days after harvest: 1-3 = acceptable, 4 = marginal, 5 = unacceptable

Virginia Table 4. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of red-skinned trial grown for 81 days at Painter, Virginia, 1999.

Clone <sup>1</sup>	Yield >1.5" cwt/A	Marketable Yield Percentage cwt/A of std.	Size Distribution <sup>2</sup> By class (%)				Percentage Over		Percent Defects	Specific Gravity <sup>3</sup>
			1	2	3	4	1.88"	2.5"		
All Blue	31	0	82	1	0	0	1	0	17	1.069
Dark Red Norland (std)	266	192	28	36	36	0	72	36	0	1.056
NorDonna	184	84	48	37	14	0	51	14	1	1.062
Red LaSoda	257	183	25	28	42	1	71	43	4	1.057
Red Ruby	317	194	31	31	30	0	61	30	8	1.056
Rideaux	226	182	18	27	52	2	81	54	2	1.067
Super Red Norland	202	166	16	25	51	6	82	58	2	1.053
B0811-4	118	18	84	13	3	0	15	3	0	1.085
B0852-7	268	219	18	21	58	3	82	61	0	1.069
B0967-11	300	244	18	31	48	2	81	50	1	1.082
B1145-2	158	77	51	31	17	1	48	17	1	1.055
B1492-12	130	19	75	13	1	0	14	1	11	1.060
B1495-6	233	178	23	29	45	3	76	47	1	1.067
Waller Dunan										
K=100, P=0.05	30	23								

<sup>1</sup>Planted April 22, harvested July 12, 1999.

<sup>2</sup>Size distribution 1= 1.5-1.88"; 2=1.88-2.5"; 3=2.5-3.25"; 4=>3.25".

<sup>3</sup>Determined by weight in air/weight in water method.

Virginia Table 5. Yield, marketable yield, percentage of yield by grade size distribution, and specific gravity of russet trial grown for 90 days at Painter, Virginia, 1999.

Clone <sup>1</sup>	Yield >1.5" cwt/A	Marketable Yield Percentage cwt/A of std.	Size Distribution <sup>2</sup> By class (%)				Percentage Over 1.88" 2.5"	Percent Defects	Specific Gravity <sup>3</sup>
			1	2	3	4			
BelRus	187	127	26	51	15	1	68	17	1.073
Innovator	209	96	21	37	9	1	46	9	1.068
Russet Norkotah (std)	167	98	33	45	12	3	59	15	1.070
Russet Norkotah #3	68	23	58	33	1	0	33	1	1.071
Russet Norkotah #8	134	69	40	39	8	5	52	13	1.068
Shepody	119	55	27	44	1	0	45	1	1.075
A81386-1	169	110	30	51	10	4	65	14	1.064
A8495-1	66	17	71	23	3	0	26	3	1.075
AO82611-7	194	120	27	53	8	1	62	9	1.071
B1409-2	213	157	20	45	24	5	74	29	1.071
B9922-1	180	129	18	46	22	5	72	26	1.075
Waller Duncan									
K=100, P=0.05	53	79							

<sup>1</sup>Planted April 22, harvested July 12, 1999.

<sup>2</sup>Size distribution 1= 1.5-1.88"; 2=1.88-2.5"; 3=2.5-3.25"; 4=>3.25".

<sup>3</sup>Determined by weight in air/weight in water method.

Virginia Table 6. Plant and tuber characteristics and tuber defects for round-white, chip, and commercial clones grown at Painter, Virginia, 1999.

Clone	Vine <sup>1</sup>		Tuber <sup>1</sup>			Tuber Defects				Heat Necrosis <sup>2</sup>		
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Sprouts	Sun-burn	Second Growth	Growth Crack	# of Tubers	Rating	
Advanced Round White Trial												
Atlantic	9	9	2	6	4	9	9	9	9	9	7	6
Superior	6	9	3	6	5	9	9	9	9	9	0	9
AF1455-20	8	9	2	5	4	9	9	9	9	9	0	9
AF1569-2	8	9	2	7	4	9	9	9	9	9	0	9
AF1921-9	7	9	3	4	4	9	8	9	9	9	2	8
AF1938-3	7	9	2	6	5	9	9	9	9	9	1	8
AF1949-1	9	7	2	6	4	9	9	9	9	6	0	9
B1065-51	6	9	2	6	5	9	9	9	9	9	1	8
B1425-9	7	9	4	6	6	9	9	9	9	9	3	7
B1440-18	8	9	4	7	5	9	9	9	9	6	0	9
NYR17-7	9	9	2	6	5	9	8	7	9	9	0	9
NYR17-106	7	9	3	7	6	9	9	9	9	9	0	9
NYS28-2	8	9	4	4	5	9	9	9	9	9	0	9
NYS32-3	8	9	2	7	5	9	9	9	9	9	1	8
NYS33-5	7	9	2	7	5	9	9	8	7	9	0	9
Chip Trial												
Atlantic	8	9	2	3	5	9	9	9	9	9	8	6
Bolesta	9	9	2	5	2	9	9	7	7	9	0	9
Snowden	8	8	2	6	4	9	9	7	9	9	0	9
Superior	6	9	4	7	6	9	9	9	9	9	0	9
AF1896-2	7	9	3	5	5	9	9	9	9	9	0	9
AF1950-1	8	9	3	4	4	9	9	7	9	9	0	9
B0564-8	7	9	2	7	6	9	9	7	9	9	0	9
B0564-9	7	9	2	7	6	9	9	9	9	9	0	9
NY120	7	9	3	4	4	9	9	7	7	9	0	9
NYS14-2	7	9	2	3	4	9	9	9	9	9	0	9
NYS300-7	6	9	2	7	6	9	9	9	9	6	0	9
SW94128	9	9	3	4	3	9	9	7	9	9	0	9



Virginia Table 6. Continued.

Clone	Vine <sup>1</sup>		Tuber <sup>1</sup>			Tuber Defects				Heat Necrosis <sup>2</sup>	
	Maturity	Air Pollution	Shape	Appear.	Skin Matur.	Sprouts	Sun-burn	Second Growth	Growth Crack	# of Tubers	Rating
<i>Commercial Trial</i>											
Appell	8	9	3	5	4	9	9	7	9	0	9
Arnova	8	9	3	4	6	9	9	9	9	1	4
Atlantic	9	9	2	7	5	9	9	9	9	5	6
Caesar	8	9	3	4	5	9	9	6	9	0	9
Fabula	9	9	3	6	4	9	9	9	9	0	9
Gallia	8	9	3	4	5	9	9	7	9	11	5
Maranca	7	9	3	4	5	9	9	5	9	0	9
Matilda	8	9	3	3	5	9	9	6	9	0	9
SW93107	7	9	4	2	6	9	9	7	9	0	9
SW9410	9	9	3	5	6	7	9	6	9	0	9
Superior	7	9	3	6	6	9	9	9	9	0	9
Vivaldi	7	6	3	5	4	9	9	7	9	3	6
Yukon Gold	7	7	3	5	4	9	9	9	7	4	8

<sup>1</sup> Vine maturity ratings taken 77 days after planting. NE184 rating system used (9=exceptional or desirable, 1=not acceptable)<sup>2</sup> Twenty tubers sampled.

Virginia Table 7. Plant and tuber characteristics and tuber defects for red-skinned and russet-skinned clones grown at Painter, Virginia, 1999.

Clone	Vine <sup>1</sup>			Tuber <sup>1</sup>				Tuber Defects				Heat Necrosis <sup>2</sup>		
	Maturity	Air	Shape	Appear.	Matur.	Skin	Color	Texture	Sprouts	Sun- burn	Second Growth	Growth Crack	# of Tubers	Rating
		Pollution												
All Blue	9	8	7	2	5	1	8	9	9	9	9	9	0	9
Dark Red Norland	5	6	2	7	8	2	7	9	9	9	9	7	0	9
Nordonna	7	9	2	6	6	2	7	9	9	9	9	9	0	9
Red Lasoda	7	9	3	5	5	3	7	9	9	9	6	9	0	9
Red Ruby	7	9	4	5	5	2	7	9	9	9	6	7	0	9
Rideaux	7	9	2	7	7	3	8	9	9	9	9	8	4	5
Super Red Norland	4	6	3	7	6	2	7	9	9	9	9	7	0	9
B0811-4	4	5	2	8	8	2	7	9	9	9	9	9	0	9
B0852-7	8	9	3	7	7	1	7	9	9	9	9	9	1	8
B0967-11	7	8	2	7	5	1	7	9	9	9	9	9	0	9
B1145-2	4	4	2	6	8	2	7	9	9	9	9	9	0	9
B1492-12	7	8	2	7	6	3	7	9	9	9	5	9	0	9
B1495-6	7	8	3	7	4	2	6	9	9	9	9	9	0	9
Russet-skinned Trial														
BelRus	5	9	7	6	6	5	2	9	9	9	9	9	0	0
Innovator	7	9	7	6	5	6	4	9	9	9	5	9	0	9
Russet Norkotah	8	9	7	6	5	5	3	9	9	9	9	9	0	9
Russet Norkotah #3	9	9	8	7	5	5	3	9	9	9	9	9	0	9
Russet Norkotah #8	9	9	7	5	4	5	3	9	9	9	9	9	2	8
Shepody	9	8	6	4	4	8	7	9	9	9	5	7	0	9
A81386-1	9	9	6	6	4	6	4	9	9	9	9	9	0	9
A8495-1	9	9	6	7	5	5	3	9	9	9	9	7	0	9
A082611-7	8	9	8	6	6	6	4	9	9	9	9	9	0	9
B1409-2	7	9	7	5	5	6	4	9	9	9	9	7	1	8
B9922-1	7	9	6	6	6	5	2	9	9	9	9	9	0	9

<sup>1</sup>Vine maturity ratings taken 77 days after planting. NE184 rating system used (9=exceptional or desirable, 1=not acceptable).

<sup>2</sup>Twenty tubers sampled.

## Wisconsin Potato Variety Trials

Horia Groza, Bryan Bowen, and Jiming Jiang.

Within the Wisconsin breeding program, the advanced selections are tested in the fifth and sixth field generations in replicated trials at two locations. After being included for two other years in the state field trial system, the best lines are tested for three years in the North Central Regional Trial (NCRT).

The 5th and 6th field generation trials were conducted on irrigated sandy soil in Rhinelander, under shorter and colder season conditions, and in Hancock, under longer and warmer season conditions. They were planted in a randomized block design with single row plots of 20 hills/plot, 3 replications and 12" x 36" spacing. Planting, vine killing and harvest dates were: (1) in Rhinelander - 5/11/99, 8/18/99 and 8/30/99; (2) in Hancock - 4/26/99, 8/31/99 and 9/15/99, respectively. The NCRT was conducted in Hancock under exactly the same conditions and dates as the previously mentioned Hancock trials but in randomized block design of four replications.

The yield was graded into A size ( $>1\frac{7}{8}$ " diameter), B size ( $<1\frac{7}{8}$ " diameter) and culls. The vigor at the second blooming, vine maturity, early blight at the beginning of August and common scab on tubers were scored on a 1-9 scale (1 = very weak, very early or very susceptible, respectively). The tubers were described for shape (1=round, 5=oval, 9=long) and shape uniformity (9=very uniform), and flatness. Five tubers larger than 8 oz were cut lengthwise for scoring the internal defects. A general preference score for tuber external and internal appearance has been used (1=undesirable, 2=acceptable, 3=good, 4=very good). The specific gravity was determined by measuring the weight in air and water and the table values are expressed as  $(SG - 1) \times 1000$ . The chip color was

scored for five tubers/plot, from 1 to 10, according to the PCII Color Chart (where 1 is the lightest and 4 is the maximum accepted). The frying time interval lasted until the bubbling stopped. (This measures the reducing sugars factor and eliminates the solids factor.) The chip color for the trials including the advanced selections was determined at reversion (a month storage at 55°F) and after three and six month storage at 40°F with and without reconditioning (two weeks at 65°F). The chip color of the North Central Regional Trial entries was measured after 5 days and 160 days at 40°F. In the latter case a 2 week reconditioning period at 65°F was also applied. In 1999, for all the 40°F storage treatments, the tubers underwent a prior twenty day period of healing and gradual cooling treatment from 60°F to 40°F.

### Characteristics of experimental lines in NCRT, Hancock 1999.

**MN 16966** - white, long tubers; good yield, good solids; vigorous haulm, medium resistance to early blight; very light russetting; some rough, offshape tubers; vascular discoloration and internal brown spot.

**MN 17922 R** - red skin, very good color intensity, attractive tuber appearance; medium-late, medium vigorous haulm, medium resistance to early blight; low yield, scab, offshape tubers, skinning.

**MN 18153 rus** - russet, roundish, blocky, nice, good yield, no scab; medium-early/medium-late, less vigorous haulm, medium solids; more susceptible to early blight, growth cracks, vascular discoloration. It ranked in the top five entries of the North Central Regional Trial.

**MN 18713 rus** - russet, oval, heavy net, good yield, good solids, no scab noticed, good fry color; medium-late, variable size tubers.

**MSA 091-1** - white, round-oval tubers with light netting, good size tubers; good yield, good solids, good chip color after short storage, resistant to scab; medium maturity, vigorous haulm, medium susceptibility to early blight, medium susceptibility to Rhizoctonia; obvious lenticels, some misshapen tubers, growth cracks.

**MSB 107-1** - white, very good size tubers, very good yield; medium-late, medium vigorous haulm, very resistant to early blight; protuding eyes, some growth cracks, blackspot.

**MSE 018-1** - white, oval, flat, good size, smooth tubers; excellent yield, excellent solids; very late, very high vigor, resistant to early blight.

**MSE 263-10** - white, round tubers; medium-early, medium vigor, medium yield, medium solids; some tubers are rough, misshapen.

**ND 2470-27** - white, round, nice, good size tubers; excellent yield, good solids, good chip color, practically no external and internal defects; medium-late, medium vigorous haulm, medium resistance to early blight; green tubers, obvious lenticels, medium susceptibility to scab, folded bud end.

**ND 2937-3 R** - red, nice tubers, excellent color intensity, medium good yield; medium-late, less vigorous haulm, medium resistance to early blight; obvious lenticels.

**ND 3574-5 R** - red, oval, nice tubers, excellent color intensity, good size; medium good yield; no internal defects; medium-early, less vigorous haulm, medium susceptibility to early blight; obvious lenticels, scab, skinning.

**ND 4093-4 rus** - russet, blocky tubers, good net, excellent tuber appearance; fresh market potato with better frying quality than Norkotah; practically no external defects (except greening), resistant to scab; medium-early/ medium-late,

less vigorous haulm, medium resistance to early blight, medium low solids; bottle neck tubers. The line ranked number one in NRCT in Hancock in 1999 (number two in 1998).

**ND 5084-3 R** - red skin, excellent color, attractive appearance; excellent yield; medium-late/late, vigorous haulm, resistant to early blight; skinning, scab, internal necrosis, stolons.

**W 1148 R** - red, round tubers, the color intensity is medium, equal to Dark Red Norland, not darker but more stable; medium deep eyes, good size tubers; good yield, medium high solids; medium-late, medium vigor, medium resistance to early blight; some offshapen, some internal necrosis.

**W 1348 rus** - russet, Burbank type potato, excellent length index; very resistant to scab, resistant to mosaic virus, resistant to Rhizoctonia; medium yield, medium solids, better fry color than Russet Burbank when procesed from cold storage; medium-late, medium vigor; medium size potato, some hollow heart.

**W 1355-1** - white, round tubers; cold chipping potato superior to Snowden and NorValley; outstanding color when chipping directly from six month storage at 40°F; medium-late/late, medium vigorous haulm, medium resistance to early blight; good yield but small size, good solids, practically no defects (except some vascular discoloration).

**FV 8957-10** - white, round, very attractive appearance, uniform tubers; medium-early/medium-late, less vigorous haulm, medium susceptibility to early blight, medium good yield; low solids, medium susceptibility to scab, greening, hollow heart. For tuber appearance it ranked second in NCRT in 1999.

**FV 9649-6** - white, long, blocky, nice tubers; medium-early/medium-

late, less vigorous haulm, medium susceptibility to early blight, medium good yield; low solids, bad chip color when fried from cold.

**WIS 75-30** - white, round, oval, flat tubers; good yield, good chip color, good solids; medium-late/late, medium vigorous haulm; variable shape and size; Rhizoctonia, greening.

**Wisconsin Table 1.** Two year performance of two new chipping advanced selections in two locations: Rhinelander (100 days) and Hancock (120 days)

Cultivar	Yield <sup>1</sup>		Hancock					Chip Color <sup>7</sup>		
	Rhi	Han	VMt <sup>2</sup>	EBt <sup>3</sup>	Scb <sup>4</sup>	Pref <sup>5</sup>	SpGv <sup>6</sup>	-----		
	US#1	US#1						Rev	3mD	3mR
Atlantic	319	372	4.8	6.8	7.8	2.8	89	3.4	7.5	5.8
Snowden	288	366	5.0	4.8	8.2	2.5	80	3.1	8.6	4.9
W 1431	219	366	6.1	5.4	8.7	2.0	79	3.2	6.0	5.5
W 1443	345	425	4.7	6.2	8.3	2.8	75	3.6	9.2	6.1

<sup>1</sup>Yield = cwt/A

<sup>2</sup>VMt: Vine maturity (1=early, 9=late)

<sup>3</sup>EBt: Early blight (1=very susceptible, 9=none)

<sup>4</sup>Scb: Scab (1=very susceptible, 9=none)

<sup>5</sup>Pref: Preference, general rating (1=not desired, 2=acceptable, 3=good, 4=very good)

<sup>6</sup>SpGv: (Specific Gravity -1) x 1000

<sup>7</sup>Rev = Reversion (1 month storage at 55°F), 3m = 3 month storage at 40°F (D=direct, R = reconditioned 14 days at 65°F). Visual scores in CPII scale (1=light, 10=dark).

**Wisconsin Table 2.** Two year performance of two new russet advanced selections in two locations: Rhinelander (100 days) and Hancock (120 days).

Cultivar	Yield <sup>1</sup>		Hancock							
	Rhi	Han	VMt <sup>2</sup>	EBt <sup>3</sup>	Scb <sup>4</sup>	Pref <sup>5</sup>	SpGv <sup>6</sup>	Skg <sup>7</sup>	TbU <sup>8</sup>	IntD <sup>9</sup>
	US#1	US#1								
RNorkotah	254	385	4.4	3.4	8.9	2.2	65	8.8	8.5	26.0
RBurbank	244	414	5.8	6.5	8.9	4.7	71	8.6	6.6	14.0
W 1836-3r	368	375	5.8	5.8	8.8	2.2	70	9.0	8.2	6.0
RNorkotah	230	330	4.5	4.0	8.0	2.5	56	9.0	8.7	6.0
RBurbank	224	373	5.4	5.7	9.0	1.8	66	9.0	6.9	0.0
W 1876-1r	325	395	4.9	5.6	8.0	2.3	71	9.0	8.6	0.0

<sup>1-6</sup> See Table 1

<sup>7</sup> Skg: Skinning (9 = no skinning)

<sup>8</sup> TbU: Tuber shape uniformity (9=very uniform)

<sup>9</sup> IntD: Internal Defects % (Hollow Heart, Internal Brown Spot, Vascular Discoloration)



**Wisconsin Table 3.** Advanced Selection Trial 1, Rhinelander 1999 (99 days). Excerpts from a 50 entry trial.

Cultivar	Cwt/A		Vines			Tubers				
	Tot <sup>1</sup>	A's <sup>2</sup>	VMt <sup>3</sup>	Vig <sup>4</sup>	EBt <sup>5</sup>	Skg <sup>6</sup>	TbS <sup>7</sup>	TbU <sup>8</sup>	Scb <sup>9</sup>	Pref <sup>10</sup>
Atlantic	452	421	6.8	6.2	7.5	8.5	1.0	8.3	8.8	2.6
DRNorland	387	362	4.8	5.8	4.7	9.0	3.3	7.7	8.6	2.0
Goldrush	353	323	5.5	5.3	6.2	9.0	7.3	7.6	8.3	2.0
RBurbank	367	272	6.2	6.3	7.5	7.8	9.0	6.7	9.0	1.8
RNorkotah	311	265	3.7	4.8	3.7	8.7	7.0	8.7	7.7	2.5
Snowden	369	339	6.0	5.8	6.7	9.0	3.0	8.7	8.0	2.5
Superior	270	244	2.7	3.7	3.3	9.0	4.0	7.7	9.0	2.5
W 1902-4	292	264	7.0	5.7	8.0	5.7	3.3	7.8	5.0	1.6
W 1904-3	277	246	5.8	5.8	7.3	6.3	3.0	8.7	8.4	2.2
W 1944-3	308	266	6.7	5.8	7.0	6.7	2.3	8.7	8.0	2.3
W 1949-1	406	380	6.7	7.7	7.8	6.0	3.0	8.7	8.9	2.3
W 1980-4	366	300	6.0	7.2	7.7	6.3	2.3	8.3	8.3	1.7
W 1992-3	441	402	5.0	5.7	6.0	8.2	3.2	8.3	7.7	1.8
W 2033-8	404	378	7.8	6.0	7.2	7.5	3.3	8.3	5.0	1.3
W 2062-1	425	370	6.7	7.2	8.3	8.7	2.7	8.3	5.7	1.7
W 2264-1	267	259	6.8	6.8	8.0	8.3	1.7	8.7	9.0	2.7
W 2318-3	373	315	5.5	6.0	6.3	8.3	3.0	8.0	7.7	2.0
W 2319-4	398	380	6.8	7.2	7.5	6.3	3.0	8.0	6.8	2.0
W 2324-1	485	431	6.7	7.8	7.7	6.3	1.7	7.3	5.3	1.2
W 2326-1	276	228	5.0	5.3	5.8	8.7	2.7	8.7	8.8	2.5
W 2326-2	254	200	5.0	5.7	4.5	9.0	2.7	8.3	9.0	2.2
W 2326-3	330	296	6.3	6.5	7.3	9.0	2.3	8.7	8.2	2.6
W 2327-1	356	337	5.0	5.2	6.3	8.5	3.3	8.2	6.2	1.8
W 2343-3	370	351	7.5	6.8	6.7	8.7	3.0	8.0	5.7	1.3
W 2249-1r	411	340	8.3	7.3	8.8	8.8	7.7	8.9	8.7	2.3
W 2250-2r	450	379	5.2	6.3	6.2	8.7	7.7	8.7	6.0	1.7
W 2371-1r	399	362	6.7	5.5	6.7	8.7	8.3	8.0	7.7	1.7
W 2275-9R	379	358	6.7	6.0	7.7	8.3	3.3	7.7	7.7	1.7
Avg chips	351	311	6.2	6.3	6.8	7.8	2.8	8.2	7.7	2.1
Avg rus	382	324	5.9	6.1	6.6	8.6	7.8	8.1	7.9	2.0
Avg red	389	360	5.8	5.7	5.9	8.3	3.3	8.1	7.9	2.0
Average	360	319	6.1	6.2	6.6	7.3	3.4	8.2	7.8	2.1

<sup>1</sup>Tot = Total yield    <sup>2</sup>A's = A size yield    <sup>3</sup>VMt: Vine maturity (1=early, 9=late)    <sup>4</sup>Vig: Vine vigor (1=weak, 9=vigorous)

<sup>5</sup>EBt: Early blight (1=very susceptible, 9=none)

<sup>6</sup>Skg: Skinning (9 = no skinning)    <sup>7</sup>TbS: Tuber shape (1=round, 9=long)    <sup>8</sup>TbU: Tuber shape uniformity (9=very uniform)

<sup>9</sup>Scb: Scab (1=very susceptible, 9=none)

<sup>10</sup>Pref: Preference, general rating (1=not desired, 2=acceptable, 3=good, 4=very good).

**Wisconsin Table 4.** Advanced Selection Trial 1, Rhinelander 1999 (99 days). Excerpts from a 50 entry trial.

Cultivar	% Internal Defects			Chip Color					
	HH <sup>1</sup>	IBS <sup>2</sup>	VD <sup>3</sup>	SpGv <sup>4</sup>	Rev <sup>5</sup>	3mD <sup>6</sup>	3mR <sup>6</sup>	6mD <sup>7</sup>	6mR <sup>7</sup>
Atlantic	45	00	00	84	3.2	6.1	5.8	8.7	6.1
DRNorland	00	00	00	57	5.8	9.9	9.7	9.9	9.9
Goldrush	00	05	05	64	6.3	9.8	9.1	9.8	9.1
RBurbank	00	00	00	71	5.4	9.5	8.1	9.9	8.8
RNorkotah	05	15	00	59	5.7	9.7	9.1	9.9	9.5
Snowden	00	00	00	80	3.1	6.0	4.0	6.1	3.1
Superior	00	00	00	66	4.6	9.9	7.5	9.3	8.7
W 1902-4	00	00	00	82	2.9	5.5	3.6	6.7	4.4
W 1904-3	00	00	00	85	3.0	5.2	3.3	6.9	5.0
W 1944-3	05	00	05	81	2.6	5.3	3.4	7.1	4.5
W 1949-1	15	00	15	82	3.0	6.7	4.6	7.7	4.3
W 1980-4	00	00	05	92	2.7	3.9	3.0	5.2	4.9
W 1992-3	00	00	05	78	3.8	8.7	7.2	9.6	9.3
W 2033-8	05	00	00	71	3.4	7.7	6.7	8.9	8.1
W 2062-1	25	00	05	86	3.4	6.1	4.4	6.7	6.7
W 2264-1	15	00	00	85	3.3	7.7	7.5	8.7	7.2
W 2318-3	20	05	20	82	3.1	8.0	4.1	9.1	4.1
W 2319-4	25	05	00	78	2.3	4.7	3.2	6.9	3.3
W 2319-6	00	05	00	70	2.9	7.1	5.0	7.6	4.4
W 2324-1	05	00	00	81	3.1	6.8	6.1	8.1	6.7
W 2326-1	15	05	15	77	3.1	7.3	5.1	9.1	5.4
W 2326-2	25	05	05	63	3.3	7.1	5.9	7.9	6.5
W 2326-3	05	00	05	73	3.5	7.9	6.1	8.3	5.0
W 2327-1	25	15	00	67	2.7	4.7	2.8	6.0	3.6
W 2343-3	00	00	05	80	4.9	6.4	5.1	6.4	5.8
W 2249-1r	05	00	00	74	6.7	9.1	7.6	9.9	9.1
W 2250-2r	20	00	00	69	5.7	7.9	7.7	8.9	8.7
W 2371-1r	00	00	00	72	6.6	8.8	7.7	9.9	9.1
W 2275-9R	00	00	20	65	5.8	9.5	9.3	9.8	9.9
Avg chips	17	02	05	76	3.2	6.5	5.1	7.7	5.7
Avg rus	05	05	02	68	6.1	9.1	8.2	9.7	9.1
Avg red	00	05	02	57	5.9	9.8	9.4	9.9	9.9
Average	15	02	05	73	3.9	7.2	6.0	8.2	6.7

<sup>1</sup> HH=Hollow heart    <sup>2</sup> IBS=Internal Brown Spot

<sup>3</sup> VD=Vascular discoloration

<sup>4</sup> SpGv: (Specific Gravity -1) x 1000

<sup>5</sup> Rev = Reversion    <sup>6</sup>3m = 3 month storage at 40°F (D=direct, R = reconditioned 14 days at 65°F)

<sup>7</sup> 6m = 6 month storage at 40°F (D=direct, R = reconditioned 14 days at 65°F). Visual scores in CPII scale (1=light, 10=dark)

**Wisconsin Table 5.** Advanced Selection Trial 2, Rhinelander 1999  
(99 days). Excerpts from a 30 entry trial.

Cultivar	Cwt/A		Vines			Tubers				
	Tot <sup>1</sup>	A's <sup>2</sup>	VMt <sup>3</sup>	Vig <sup>4</sup>	EBt <sup>5</sup>	Skg <sup>6</sup>	TbS <sup>7</sup>	TbU <sup>8</sup>	Scb <sup>9</sup>	Pref <sup>10</sup>
Atlantic	414	371	6.3	6.8	7.5	8.7	3.0	8.2	8.0	2.7
DRNorland	365	333	4.8	5.3	5.3	8.7	4.0	7.7	9.0	2.2
RBurbank	378	274	6.0	6.7	6.8	9.0	8.0	7.3	9.0	2.2
RNorkotah	304	241	3.2	4.5	3.3	8.9	7.0	8.9	8.7	2.5
Norvalley	408	348	6.5	7.3	6.5	7.0	2.7	8.0	8.0	2.2
Snowden	385	334	5.7	6.7	5.7	9.0	1.7	8.7	8.3	2.2
Superior	306	279	3.5	5.3	3.2	9.0	4.3	8.0	9.0	2.5
W 1769-7	343	324	6.7	6.5	7.3	5.7	4.3	7.7	8.3	1.9
W 1431	355	333	7.3	6.5	6.7	5.3	2.3	8.3	8.3	2.0
W 1773-3	412	378	6.5	5.5	6.8	6.7	3.3	7.3	6.8	2.0
W 1773-7	422	399	6.8	7.0	7.5	6.7	2.3	8.0	8.3	2.0
W 1774-1	326	235	6.5	6.3	7.5	8.0	2.3	8.3	7.3	2.0
W 1775-14	349	317	5.8	5.8	6.2	7.3	2.3	8.0	9.0	2.6
W 1782-5	343	298	5.2	5.5	5.8	7.7	2.3	8.7	8.3	1.8
W 1806-3	326	273	5.3	6.0	5.3	8.0	2.3	7.7	8.7	2.3
W 1806-9	307	256	5.0	5.7	5.5	8.7	4.0	9.0	8.3	2.2
W 1811-1	375	345	6.8	7.5	7.2	8.0	3.0	8.7	7.7	2.2
W 1812-22	346	321	5.3	6.0	5.3	8.7	2.7	8.7	7.7	2.3
W 1949-4	336	270	6.5	5.8	7.2	7.7	2.3	8.0	8.7	2.0
W 2504-9	327	285	7.8	6.7	8.2	6.0	3.3	7.3	7.3	1.8
W 2507-2	296	214	5.3	6.0	6.0	7.6	2.3	8.3	8.3	2.0
W 1817-4r	364	310	6.3	7.2	6.8	9.0	8.0	7.7	9.0	2.0
W 1823-2r	285	230	6.5	6.2	7.5	9.0	8.3	8.0	9.0	2.0
W 1836-3r	403	364	7.5	7.2	7.5	8.9	7.3	8.0	9.0	2.8
W 1864-4r	304	244	5.3	6.0	5.0	9.0	7.0	8.3	8.7	2.6
W 1848-2R	384	315	7.7	6.7	8.2	8.3	1.0	9.0	8.7	2.4
W 1952-1R	307	256	7.5	6.3	7.3	7.0	1.0	8.3	8.3	1.9
W 1962-1R	337	297	3.3	5.3	3.0	9.0	3.3	8.7	8.7	2.5
Avg chips	354	310	6.1	6.3	6.4	7.5	2.8	8.2	8.1	2.2
Avg rus	336	275	5.8	6.2	6.2	8.9	7.6	8.0	8.4	2.3
Avg red	348	300	5.8	5.9	6.0	8.3	2.3	8.4	8.7	2.3
Average	349	299	5.9	6.2	6.3	8.0	4.0	8.2	8.3	2.2

<sup>1-10</sup> See Table 3

**Wisconsin Table 6.** Advanced Selection Trial 2, Rhinelander 1999 (99 days). Excerpts from a 30 entry trial.

Cultivar	% Internal Defects				Chip Color				
	HH <sup>1</sup>	IBS <sup>2</sup>	VD <sup>3</sup>	SpGv <sup>4</sup>	Rev <sup>5</sup>	3mD <sup>6</sup>	3mR <sup>6</sup>	6mD <sup>7</sup>	6mR <sup>7</sup>
Atlantic	54	00	14	83	3.4	6.7	6.1	8.7	7.2
DRNorland	00	00	00	53	5.5	9.5	9.9	9.9	9.9
RBurbank	14	00	00	67	5.5	9.5	9.3	9.5	8.3
RNorkotah	26	00	00	59	5.9	9.9	8.9	9.9	9.7
Norvalley	26	00	00	72	2.9	5.7	5.5	6.0	6.4
Snowden	14	00	00	76	3.1	6.7	4.7	7.5	3.1
Superior	00	06	06	64	4.2	8.3	7.7	8.7	8.7
W 1769-7	60	00	00	76	3.0	5.1	3.6	7.6	5.3
W 1431	14	00	00	77	3.3	5.6	3.8	6.9	5.0
W 1773-3	00	00	00	67	2.9	6.5	3.9	6.4	4.5
W 1773-7	00	00	00	81	3.3	7.3	5.6	8.1	5.2
W 1774-1	14	00	00	93	2.9	5.9	5.5	8.7	6.3
W 1775-14	00	26	06	73	2.9	5.8	4.5	7.6	7.0
W 1782-5	00	06	00	77	3.0	5.7	4.4	7.1	6.5
W 1806-3	06	26	00	83	3.1	7.4	4.9	7.9	4.9
W 1806-9	00	26	06	84	3.4	7.1	6.5	7.7	4.4
W 1811-1	00	00	00	82	3.3	6.8	6.1	8.0	6.8
W 1812-22	00	06	00	83	2.7	4.9	3.2	6.7	3.5
W 1949-4	00	00	00	76	2.3	5.2	3.8	5.1	3.7
W 2504-9	86	00	00	93	2.4	3.9	3.1	3.9	3.0
W 2507-2	00	00	00	79	3.0	3.6	3.1	4.0	3.3
W 1817-4r	66	00	00	72	5.4	8.9	7.1	8.2	7.5
W 1836-3r	06	00	00	71	4.9	8.7	7.9	8.8	9.3
W 1864-4r	06	00	00	65	5.2	9.8	8.7	9.9	8.9
W 1848-2R	00	00	00	62	6.0	8.3	7.5	9.0	8.8
W 1952-1R	00	00	00	59	5.2	8.3	8.9	9.9	9.9
W 1962-1R	00	00	00	63	6.4	9.9	9.1	9.9	9.9
Avg chips	16	06	02	79	3.1	6.0	4.8	7.0	5.3
Avg red	00	00	00	59	5.8	9.1	8.9	9.8	9.7
Avg rus	16	00	00	65	5.3	9.3	8.4	9.2	8.7
Average	14	04	02	73	4.0	7.3	6.3	8.0	6.8

<sup>1-7</sup> See Table 4

**Wisconsin Table 7.** Advanced Selection Trial 1, Hancock, 1999 (127 days). Excerpts from a 50 entry trial.

Cultivar	Cwt/A				Vines			Tubers		
	Tot <sup>1</sup>	A's <sup>2</sup>	C's <sup>3</sup>	%As <sup>4</sup>	VMt <sup>5</sup>	Vig <sup>6</sup>	EBt <sup>7</sup>	Skg <sup>8</sup>	TbU <sup>9</sup>	Pref <sup>10</sup>
Atlantic	618	514	97	83	5.2	5.0	7.5	9.0	7.7	2.6
DRNorland	572	507	49	88	5.5	4.5	6.5	8.5	6.7	1.4
Goldrush	457	390	48	85	5.5	5.0	5.2	9.0	7.0	1.9
RBurbank	622	440	155	71	5.7	5.7	7.0	9.0	6.3	1.4
RNorkotah	517	488	21	94	3.7	5.0	3.5	9.0	9.0	2.9
Snowden	673	625	38	93	5.7	6.5	8.0	9.0	8.3	2.3
Superior	501	418	78	83	3.2	4.0	4.2	9.0	7.3	1.8
W 1902-4	582	526	40	90	7.0	5.7	7.7	7.0	8.0	2.3
W 1904-3	573	492	58	86	6.0	5.7	8.0	8.5	7.3	1.7
W 1944-3	516	457	49	88	6.5	5.0	6.2	7.3	7.3	2.1
W 1949-1	550	503	37	91	6.5	6.2	6.5	9.0	8.0	2.2
W 1980-4	716	631	71	88	5.0	6.5	7.5	8.2	8.3	2.0
W 1992-3	520	480	32	92	5.5	5.5	7.0	8.7	8.3	2.1
W 2020-4	779	697	66	89	5.5	6.7	7.5	9.0	7.7	2.2
W 2033-8	581	549	27	94	6.9	5.5	7.0	9.0	7.7	2.3
W 2062-1	721	662	40	92	6.0	7.7	8.3	9.0	8.3	2.1
W 2264-1	520	479	36	92	5.5	5.7	7.0	9.0	8.0	2.3
W 2318-3	557	526	20	94	5.7	5.0	5.0	9.0	8.7	2.3
W 2319-4	550	498	47	90	7.0	7.0	7.7	8.3	7.7	1.9
W 2324-1	881	802	59	91	6.7	7.0	8.0	8.7	6.7	1.4
W 2326-1	545	503	22	92	5.0	5.5	6.2	9.0	8.0	2.0
W 2326-2	568	501	58	88	5.5	6.0	6.0	9.0	7.3	1.8
W 2326-3	633	594	31	94	6.0	5.5	6.0	9.0	8.3	2.3
W 2327-1	541	513	16	95	5.5	5.0	6.5	9.0	8.3	2.3
W 2343-3	526	496	16	94	6.5	6.5	5.5	9.0	8.3	3.0
W 2249-1r	574	471	67	82	6.7	6.5	7.7	9.0	7.7	2.0
W 2250-2r	527	485	25	92	5.7	6.0	6.5	9.0	7.7	2.0
W 2371-1r	658	594	40	90	6.0	5.5	7.0	9.0	8.0	2.1
W 2275-9R	571	523	23	91	6.2	6.0	7.7	9.0	7.0	1.9
Avg chips	553	497	41	90	6.0	6.0	7.1	8.7	7.9	2.0
Avg rus	559	478	59	85	5.6	5.6	6.2	9.0	7.6	2.1
Avg red	464	400	42	86	5.7	5.2	6.1	8.4	7.2	1.7
Average	541	481	44	89	5.9	5.8	6.8	8.7	7.3	1.7

<sup>1</sup> Tot = Total yield <sup>2</sup> A's = A size tubers <sup>3</sup> C's = Culls

<sup>4</sup> %As = A size yield as percent of total yield

<sup>5</sup> VMt: Vine maturity (1=early, 9=late) <sup>6</sup> Vig: Vine vigor

(1=weak, 9=vigorous) <sup>7</sup> EBt: Early blight (1=very susceptible,

9=none) <sup>8</sup> Skg: Skinning (9 = no skinning) <sup>9</sup> TbU: Tuber shape

uniformity (9=very uniform) <sup>10</sup> Pref: Preference, general rating  
(1=not desired, 2=acceptable, 3=good, 4=very good).

**Wisconsin Table 8.** Advanced Selection Trial 1, Hancock, 1999 (127 days). Excerpts from a 50 entry trial.

Cultivar	% Internal Defects			Chip Color					
	HH <sup>1</sup>	IBS <sup>2</sup>	VD <sup>3</sup>	SpGv <sup>4</sup>	Rev <sup>5</sup>	3mD <sup>6</sup>	3mR <sup>6</sup>	6mD <sup>7</sup>	6mR <sup>7</sup>
Atlantic	23	01	00	89	4.0	7.4	7.2	8.3	6.9
DRNorland	00	00	00	64	7.9	9.9	9.9	9.9	9.9
Goldrush	01	01	00	67	7.0	9.9	9.3	9.9	9.5
RBurbank	02	01	00	79	6.7	9.7	8.9	9.7	8.4
RNorkotah	01	01	00	69	7.5	9.9	9.2	9.9	9.1
Snowden	03	00	00	87	3.4	6.7	4.7	6.4	4.1
Superior	00	00	00	67	6.2	8.8	8.1	9.1	9.6
W 1902-4	01	00	00	99	4.8	5.6	6.1	6.8	4.6
W 1904-3	00	00	00	89	3.3	6.1	4.4	7.6	5.8
W 1944-3	01	00	00	93	3.6	5.6	4.8	7.5	5.1
W 1949-1	01	02	00	87	3.4	7.0	5.6	7.2	5.4
W 1980-4	00	00	00	95	2.7	5.1	4.4	6.9	5.8
W 1992-3	00	00	00	82	6.5	9.1	8.1	9.9	9.7
W 2033-8	01	00	00	77	5.3	7.7	7.9	8.4	8.1
W 2062-1	01	00	00	97	3.6	6.1	6.1	6.9	5.4
W 2264-1	13	00	00	88	4.1	8.1	6.7	9.0	7.6
W 2318-3	00	17	00	91	5.2	8.6	5.2	8.0	5.5
W 2319-4	01	02	00	85	3.0	6.7	5.2	7.1	4.2
W 2319-6	01	03	00	81	3.4	6.7	4.8	6.9	3.8
W 2324-1	03	01	00	92	3.0	6.1	5.1	7.4	6.1
W 2326-1	01	01	00	88	4.6	9.1	6.8	8.4	6.6
W 2326-2	07	01	00	75	4.2	7.5	6.5	7.5	6.7
W 2326-3	02	01	00	81	4.0	8.3	6.4	8.3	5.7
W 2327-1	02	00	00	72	3.0	5.5	5.2	6.5	4.0
W 2343-3	03	00	00	89	4.5	7.1	6.5	5.8	5.7
W 2249-1r	02	00	00	83	7.3	9.9	9.0	9.9	9.2
W 2250-2r	10	00	00	77	6.0	8.6	8.1	9.6	8.8
W 2371-1r	01	01	00	84	7.0	9.3	7.2	9.5	9.7
W 2275-9R	00	00	01	66	8.0	9.9	9.9	9.9	9.9
Avg chips	03	01	00	90	4.1	7.1	6.0	7.5	6.1
Avg rus	03	01	00	77	6.9	9.6	8.6	9.8	9.1
Avg red	01	01	00	63	7.9	9.9	9.7	9.9	9.9
Average	02	01	00	85	5.0	7.8	6.9	8.1	7.0

<sup>1-7</sup> See Table 4



**Wisconsin Table 9.** Advanced Selection Trial 2, Hancock, 1999 (127 days). Excerpts from a 30 entry trial.

Cultivar	Cwt/A				Vines			Tubers		
	Tot <sup>1</sup>	A's <sup>2</sup>	C's <sup>3</sup>	%As <sup>4</sup>	VMt <sup>5</sup>	Vig <sup>6</sup>	EBt <sup>7</sup>	Skq <sup>8</sup>	TbU <sup>9</sup>	Pref <sup>10</sup>
Atlantic	580	521	51	90	5.8	5.3	6.0	8.3	8.0	2.3
DRNorland	471	440	12	93	5.2	5.2	5.8	8.0	7.7	1.8
RBurbank	584	454	103	78	6.0	6.8	7.3	8.0	5.7	1.0
RNorkotah	436	392	26	90	4.3	5.5	3.8	8.7	9.0	2.5
Snowden	687	660	19	96	6.0	6.5	8.3	8.3	7.3	2.0
Superior	462	389	67	84	3.3	4.5	3.5	9.0	7.0	1.4
W 1201	480	426	37	89	7.3	7.3	7.8	8.3	6.7	1.8
W 1769-7	526	471	40	89	6.3	7.3	7.5	8.0	7.7	2.2
W 1773-3	583	547	13	94	6.3	6.5	7.5	9.0	7.7	2.0
W 1773-7	588	563	11	96	6.8	7.5	7.5	8.7	8.3	2.2
W 1774-1	598	536	22	90	6.0	6.5	7.5	8.7	9.0	1.8
W 1775-14	493	446	16	90	5.3	5.0	7.0	9.0	9.0	2.2
W 1782-5	650	605	27	93	6.0	5.5	7.0	8.7	8.0	2.3
W 1806-3	470	403	44	86	6.0	5.8	6.0	9.0	7.3	1.8
W 1806-9	441	417	6	94	6.0	6.0	6.5	9.0	8.0	2.0
W 1811-1	467	427	13	91	6.3	6.5	7.0	8.7	8.3	2.0
W 1812-22	373	347	18	93	5.0	4.5	5.3	8.3	8.0	1.8
W 1949-4	385	345	19	90	5.0	5.5	5.8	8.7	8.7	1.9
W 2504-9	510	472	26	92	6.8	6.8	8.0	8.3	6.7	1.8
W 2507-2	412	371	13	90	6.3	5.8	6.8	9.0	8.7	1.5
W 1817-4r	535	496	26	93	7.0	7.0	8.0	8.7	7.7	2.3
W 1836-3r	570	523	30	92	7.0	7.0	7.8	8.7	7.0	1.8
W 1864-4r	389	360	7	92	6.0	5.5	6.8	9.0	8.7	2.0
W 1848-2R	483	430	12	89	7.0	6.0	7.5	8.7	8.7	2.0
W 1952-1R	437	422	7	96	6.0	5.0	6.0	6.3	7.7	2.0
W 1962-1R	398	357	14	90	5.3	5.3	5.3	8.8	8.7	2.2
Avg chips	512	469	25	92	6.0	6.1	6.8	8.6	7.9	2.0
Avg rus	480	414	43	86	5.9	6.3	6.7	8.7	7.4	1.9
Avg red	447	412	11	92	5.9	5.4	6.2	8.0	8.2	2.0
Average	495	447	28	90	6.0	6.0	6.7	8.6	7.8	1.9

<sup>1-10</sup> See Table 7

**Wisconsin Table 10.** Advanced Selection Trial 2, Hancock, 1999.  
(127 days). Excerpts from a 30 entry trial.

Cultivar	% Internal Defects				Chip Color				
	HH <sup>1</sup>	IBS <sup>2</sup>	VD <sup>3</sup>	SpGv <sup>4</sup>	Rev <sup>5</sup>	3mD <sup>6</sup>	3mR <sup>6</sup>	6mD <sup>7</sup>	6mR <sup>7</sup>
Atlantic	00	13	00	85	5.0	8.2	7.4	9.1	7.7
DRNorland	00	00	00	55	8.0	9.9	9.9	9.9	9.9
RBurbank	03	00	00	71	6.5	9.7	9.1	9.6	8.2
RNorkotah	00	00	00	--	7.4	9.9	9.8	9.9	9.5
Snowden	07	00	00	85	3.6	7.5	5.3	7.0	4.6
Superior	00	00	00	60	7.1	9.7	9.3	9.7	9.9
W 1201	03	00	00	70	5.4	7.6	6.1	8.1	7.2
W 1769-7	10	00	00	83	3.6	5.3	5.7	7.7	6.3
W 1773-3	00	00	00	78	3.4	6.6	4.9	6.5	5.1
W 1773-7	03	00	00	82	4.1	8.5	7.4	8.3	6.2
W 1774-1	00	03	00	97	3.2	6.7	6.7	7.5	5.7
W 1775-14	00	20	00	73	3.5	6.9	6.1	9.2	5.6
W 1782-5	00	00	00	82	3.5	6.9	6.4	7.5	7.2
W 1806-3	00	07	00	83	3.9	8.1	7.5	8.2	6.4
W 1806-9	03	00	00	92	3.9	8.1	7.6	8.0	7.1
W 1811-1	00	00	00	81	4.1	7.8	7.3	8.0	6.6
W 1812-22	03	00	00	82	3.6	7.3	5.8	7.6	5.0
W 1949-4	00	00	00	77	3.1	7.7	6.0	7.9	4.7
W 2504-9	23	00	00	110	2.9	4.2	3.9	4.9	4.0
W 2507-2	03	00	00	87	3.4	5.3	4.4	5.8	4.4
W 1817-4r	10	00	00	95	6.8	8.6	7.3	8.3	7.7
W 1836-3r	03	00	00	70	6.9	8.5	8.8	9.5	8.8
W 1864-4r	00	00	00	63	6.6	9.3	9.5	9.5	8.6
W 1848-2R	00	00	00	64	7.3	8.5	7.7	8.5	7.8
W 1952-1R	00	00	00	63	6.9	9.3	9.9	9.9	9.9
W 1962-1R	00	01	00	63	6.9	9.3	9.9	9.9	9.9
Avg chips	04	03	00	82	4.0	7.1	6.4	7.7	6.1
Avg rus	04	00	00	70	7.0	9.4	9.1	9.4	8.7
Avg red	00	01	00	60	7.5	9.4	9.4	9.6	9.4
Average	03	01	00	76	5.3	8.0	7.5	8.4	7.2

<sup>1-7</sup> See Table 4

**Wisconsin Table 11.** First Year Two Location (Rhinelander/Hancock) Breeding Trial Results, 1999. Best Lines from Advanced Selection Trials 1.

Cultivar	US#1 CwtA	US#1 %	VMt <sup>1</sup>	TbU <sup>2</sup>	Scb <sup>3</sup>	Pref <sup>4</sup>	Int D% <sup>5</sup>	SpGr <sup>6</sup>	Fry <sup>7</sup>
Chips (from 37 initial entries)									
Superior	359	89	3.6	7.5	9.0	2.1	00	66	5.4
Snowden	482	92	5.9	8.5	8.0	2.4	03	83	3.3
Atlantic	468	88	6.0	8.0	8.8	2.3	53	87	3.6
W 1980-4	466	85	5.5	8.3	8.3	1.8	03	94	2.7
W 2033-8	464	94	7.4	8.0	5.0	1.8	07	74	4.3
W 2324-1	616	90	6.7	7.0	5.3	1.3	13	87	3.1
W 2020-4	508	89	5.8	7.9	---	2.1	10	85	3.9
Avg chips	404	89	6.1	8.1	7.8	2.1	24	83	3.7
Russets (from 6 initial russets)									
RNorkotah	377	90	3.7	8.8	7.7	2.7	20	64	6.6
RBurbank	356	72	6.0	6.5	9.0	1.6	27	75	6.1
W 2249-1r	406	82	7.5	8.3	8.7	2.2	20	78	7.0
W 2250-2r	432	88	5.5	8.2	6.0	1.9	30	73	5.8
W 2371-1r	478	91	6.3	8.0	7.7	1.9	10	78	6.8
Avg rus	401	85	5.7	7.9	7.8	2.0	21	72	6.5
Reds (from 7 initial entries)									
DRNorland	434	91	5.2	7.2	8.6	1.7	00	60	6.9
W 2275-9R	441	93	6.5	7.3	7.7	1.8	17	65	6.9
Avg red	380	89	5.8	7.7	7.8	1.9	11	60	6.9

<sup>1</sup> VMt = Vine Maturity (1=very early, 9=very late)

<sup>2</sup> TbU = Tuber Shape Uniformity (9=very uniform)

<sup>3</sup> Scb = Scab, tested in a very highly infested field (9=none)

<sup>4</sup> Pref = Preference or General Merit (1=not desired, 2=acceptable, 3=good, 4=very good)

<sup>5</sup> IntD = Internal Defects in percent from the total of >8 oz tubers

<sup>6</sup> SpGr = (Specific Gravity-1)x1000

<sup>7</sup> Fry = Fry Color at Reversion (55°F 1 month storage; 1=very light, 10=very dark).

**Wisconsin Table 12.** Second Year Two Location (Rhinelander/Hancock) Breeding Trial Results, 1999. Best Lines from Advanced Selection Trials 2.

Cultivar	US#1 CwtA	US#1 %	VMt <sup>1</sup>	TbU <sup>2</sup>	Scb <sup>3</sup>	Pref <sup>4</sup>	Int D% <sup>5</sup>	SpGr <sup>6</sup>	Fry <sup>7</sup>
Chips (from 37 initial entries)									
Superior	334	87	3.4	7.5	9.0	2.0	13	62	5.7
Snowden	497	91	5.8	8.0	8.3	2.1	13	80	3.4
Atlantic	446	90	6.0	8.1	8.0	2.5	67	84	4.2
W 1773-3	462	93	6.4	7.5	6.8	2.0	00	73	3.2
W 1773-7	481	95	6.8	8.2	8.3	2.1	00	82	3.7
W 1782-5	452	90	5.6	8.3	8.3	2.1	07	79	3.3
W 1811-1	386	92	6.5	8.5	7.7	2.1	00	82	3.7
Avg chips	390	89	6.0	8.0	8.1	2.1	23	80	3.5
Russets (from 6 initial russets)									
RNorkotah	316	85	3.7	9.0	8.7	2.5	27	65	6.6
RBurbank	364	75	6.0	6.5	9.0	1.6	13	69	6.0
W 1817-4r	403	89	6.7	7.7	9.0	2.2	67	83	6.1
W 1836-3r	444	91	7.3	7.5	9.0	2.3	07	71	5.9
W 1860-1r	388	81	7.0	6.7	6.5	1.3	00	60	7.5
Avg rus	344	84	5.9	7.7	8.4	2.1	16	68	6.1
Reds (from 7 initial entries)									
DRNorland	387	92	5.0	7.7	9.0	2.0	00	54	6.8
W 1848-2R	372	85	7.3	8.8	8.7	2.2	00	63	6.6
W 1952-1R	339	90	6.8	8.0	8.3	2.0	00	61	6.1
Avg red	356	89	5.9	8.3	8.7	2.1	00	60	6.7

<sup>1-7</sup> See Table 11

**Wisconsin Table 13.** North Central Regional Trial, Hancock, 1999  
(127 days).

Cultivar	Cwt/A		Vines		SpG <sup>5</sup>	Chip Color			
	Tot <sup>1</sup>	A's <sup>2</sup>	VMt <sup>3</sup>	EBt <sup>4</sup>		Rev <sup>6</sup>	6mD <sup>7</sup>	6mR <sup>7</sup>	Pref <sup>8</sup>
Atlantic	577	535	5.3	6.5	90	4.0	8.7	6.4	2.7
Snowden	653	620	6.0	8.0	91	3.4	4.6	3.1	2.3
Norvalley	653	620	5.1	7.4	81	5.7	6.3	5.8	2.2
R.Pontiac	790	717	7.6	7.4	72	9.2	9.9	9.9	1.2
DRNorland	387	337	2.8	3.0	68	6.8	9.9	9.7	1.8
RNorkotah	299	257	4.5	4.8	68	7.5	9.5	9.2	2.8
R.Burbank	565	451	6.6	8.0	86	6.8	8.7	7.3	1.6
MN16966	646	561	6.9	8.3	87	5.6	6.4	6.2	1.9
MN17922R	272	241	6.8	7.8	71	7.7	9.9	9.9	2.0
MN18153r	401	358	5.0	5.0	77	7.1	8.2	7.1	2.6
MN18713r	547	497	6.4	6.6	89	5.9	7.5	6.3	2.0
MSA091-1	592	422	5.4	5.9	89	3.6	8.5	7.8	1.8
MSB107-1	618	490	6.9	8.0	84	6.0	7.6	8.0	1.9
MSE018-1	847	702	9.0	8.8	95	6.2	7.7	7.3	2.1
MSE263-10	479	367	4.8	4.9	82	3.3	6.9	7.3	2.0
ND2470-27	704	647	6.5	7.5	86	3.7	6.9	4.8	2.4
ND2937-3R	440	404	5.5	4.8	75	8.5	9.9	9.9	2.5
ND3574-5R	476	445	4.9	5.1	66	7.8	9.9	9.9	2.3
ND4093-4r	383	339	5.6	6.9	74	6.5	9.7	7.8	3.0
ND5084-3R	722	667	7.8	8.3	70	8.2	9.9	9.9	2.2
W1148R	506	473	6.4	7.1	83	5.0	8.5	8.1	2.0
W1348rus	486	440	6.1	6.3	80	6.8	7.8	7.2	2.0
W1355-1	525	484	5.5	5.9	89	2.9	3.8	3.4	2.1
FV8957-10	428	397	5.3	6.0	77	5.6	8.7	7.0	2.9
FV9649-6	425	390	5.5	5.6	73	7.3	9.9	9.9	2.4
WIS75-30	571	523	4.9	5.8	85	3.5	5.8	5.9	2.0
Avg chip	594	520	5.9	6.8	85	4.7	7.1	6.4	2.2
Avg rus	447	390	5.7	6.3	82	6.8	8.6	7.5	2.3
Avg red	513	469	6.0	6.2	72	7.6	9.7	9.6	2.0
Average	538	476	5.9	6.5	81	5.9	8.1	7.5	2.2

<sup>1</sup> Tot = Total yield <sup>2</sup> A's = A size tubers

<sup>3</sup> VMt: Vine maturity (1=early, 9=late)

<sup>4</sup> EBt: Early blight (1=very susceptible, 9=none)

<sup>5</sup> SpG: (Specific Gravity -1) x 1000

<sup>6</sup> Rev = after 5 days at 40°F

<sup>7</sup> 6m = after six month storage at 40°F, processed directly (D) or with reconditioning (R), respectively; visual score (CPII scale: 1=light, 10=dark).

<sup>8</sup> Pref: Preference, general rating (1=not desired, 2=acceptable, 3=good, 4=very good)









